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Arrangement



POWERS AND ORGANS OF THE MIND

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|--------------------------|--|------------------------|
| 1. Amativeness. | 12. Cautiousness. | 23. Colouring. |
| 2. Philoprogenitiveness. | 13. Benevolence. | 24. Locality or Space. |
| 3. Concentrativeness. | 14. Veneration. | 25. Order. |
| 4. Adhesiveness. | 15. Hope. | 26. Time. |
| 5. Combativeness. | 16. Ideality. | 27. Number. |
| 6. Destructiveness. | 17. Conscientiousness. | 28. Tune. |
| 7. Constructiveness. | 18. Firmness. | 29. Language. |
| 8. Acquisitiveness. | 19. Individuality: $\frac{1}{19}$ $\frac{2}{19}$. | 30. Comparison. |
| 9. Secretiveness. | 20. Form. | 31. Causality. |
| 10. Self-Esteem. | 21. Size. | 32. Wit. |
| 11. Love or Approbation. | 22. Weight. | 33. Imitation. |
| | * Wonder | |

PHRENOLOGY.

A GUIDE
TO
HUMAN AND COMPARATIVE
PHRENOLOGY.

WITH
OBSERVATIONS ON THE NATIONAL VARIETIES OF THE
CRANIUM,

AND

*A Description of Drs. Gall and Spurzheim's Method
of Dissecting the Human Brain.*

BY HENRY WILLIAM DEWHURST, F.M.W.S.

SURGEON, LECTURER ON HUMAN, VETERINARY, AND
COMPARATIVE ANATOMY, PHRENOLOGY,
&c. &c. &c.

"Let no man condemn a science he does not understand."

London :

PUBLISHED BY W. STRANGE,

21, PATERNOSTER ROW,

1831.



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TO
B. C. BRODIE, Esq. F. R. S.
SURGEON TO HIS MAJESTY,
AND
SAINT GEORGE'S HOSPITAL;
LECTURER ON SURGERY, &c. &c.

MY DEAR SIR,

Considering how you have illumined many of the obscure paths of Physiological and Pathological Science, by your able and extensive researches in Human and Comparative Anatomy, as well as by the numerous scientific experiments by which those results were obtained; permit me, to dedicate the following pages, as a small token of respect for those transcendent talents, which have been acknowledged by the whole scientific world.

I remain, dear, Sir,

Your faithful servant and former pupil,

H. W. DEWHURST.

22, Queen Street, Golden Square,
October 8, 1829.

PREFACE.



HAVING been requested by many gentlemen, who have honoured my private Lectures on Phrenology with their attendance, to publish a small but comprehensive treatise, which should serve as a text-book to my prælections, and at the same time form a work of study and reference :---for this purpose, the present volume is laid before the public, containing much useful information on the subject, which, if duly appreciated, cannot fail of being useful to the phrenological as well as the general reader.

I have already proposed to make Phrenology a portion of medical education,* and

* See " A Letter to the Right Honourable Robert Peel, Secretary of State for the Home Department, on

cannot but state the gratification I feel, at the progress this doctrine is making throughout Great Britain ; and I may say, the whole learned world. My reason for wishing it to be studied, is this, it being the only science by which we can arrive at any thing like a satisfactory conclusion, that at last we are acquainted with the functions of the brain, and consequently the manifestations of the mind. The science is yet in its infancy ; and I find from experience, that its chief opponents are ignorant of its principles, and ignorant of the structure of the *brain*, anatomically,* as well as phrenologically ; or if they possess any knowledge on the subject, it is only sufficient to

some of the impediments, defects, and abuses, existing in the present system of Medical Education ; with suggestions for their removal and correction." By H. W. Dewhurst, p. 21. 8vo. 1828.

* I use this phrase, in contradiction to the mode adopted by Drs. Gall and Spurzheim, in dissecting the brain, who pursue a method differing from that of anatomical teachers.

turn it into ridicule ; to these *sapient* individuals I recommend the adherence of the *motto* prefixed to the title page, in the adoption of which, it will be impossible to *err*. Several public journals have denounced this science in the most vituperative and ridiculous language, clearly proving, by their own remarks, their ignorance and folly. It may be asked, what benefit can Phrenology confer on mankind ? I answer, *First*, that by our possessing a knowledge of the mental manifestations of a child, for example, we may adopt a line of conduct in his education, that would be of great advantage to his future welfare. *Secondly*, it is evident, that if we arrive at a correct knowledge of the functions of the brain, we shall be able to attempt the cure of mental diseases with greater safety, and on surer grounds. This has been done with success in many instances ; for as we gain more knowledge of the cerebral ma-

ladies, the more successful will be their treatment. *Thirdly*, The anatomy of the brain and nervous system is, through the indefatigable researches of Drs. Gall and Spurzheim,* better understood than formerly; and I sincerely recommend the study of the brain, as taught by Phrenologists, which is the only correct method of attaining any thing like an idea as to its real structure. To those of my readers, who have not yet commenced its study, I beg to recommend the following piece of advice:---

“Read all the works written in favour of Phrenology, as also those against it; then use careful and attentive observations; attend the lectures delivered in illustration

* Dr. Gall, in illustration of the organ of Amativeness, the seat of which is in the cerebellum, has *actually* traced a nervous communication between that organ, and the organs of generation. See *Sur les Fonctions du cerveau*, &c., &c., par F. J. Gall, M. D. &c., tom. iii. Paris, 1822, 1825.

of this doctrine, and when the student has made himself acquainted with all the opinions *pro* and *con*, then let him carefully form his opinion, which I venture to predict, will be in favour of Phrenology ; at all events, this is the only method by which he can form it impartially.*

Although for immediate reference, the frontispiece will answer the purpose of the student ; yet, it will be necessary that he should possess a few casts, with a marked bust, so that the size and appearance of the organs can be studied ; when he is acquainted with this, the first step, he should then collect casts of celebrated characters, and compare the relative size of the various organs ; he will, in a short time, be able to manipulate the heads of his friends, and form a pretty tolerable judgement, as it is impossible, in a small work like this,

* Letter to Mr. Peel, &c., page 23.

to introduce full illustrations and farther evidence in favour of Phrenology.

The great improvements recently made in this science, and the interest felt in its welfare by all classes of the community, induces me to prophecy, that it will not be long before professorships are endowed and public professors appointed in every university and academic institution in Great Britain, as well as throughout the whole learned world.

Within the last year a series of pamphlets have been issued against Phrenology, but the observations of their authors, have clearly proved their total ignorance of the science in question; and if the limits of this work would have permitted it, I should have inserted an impartial review of these *anti-phrenological* effusions; however, I may observe, that but little credit is to be paid to their assertions, especially as one of them (Mr. Stone of Edinburgh) has, in

his quotations of physiological and phrenological writers, grossly altered their language to suit his own purposes, and which the editors of a Medical Journal have so ably exposed.*

In conclusion, should the observations contained in the following pages, and which are abridged from the best authorities, tend to the diffusion of Phrenological Science, I shall consider my labours amply rewarded.

* London Medical and Surgical Journal, vols. i. and ii., 1828, 1829.

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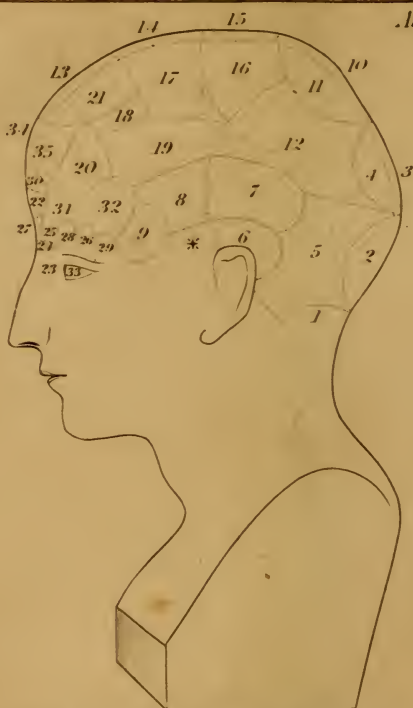
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Present

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POWERS AND ORGANS OF THE MIND

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| 1. Amativeness. | 13. Benevolence. | 25. Weight. |
| 2. Philoprogenitiveness. | 14. Veneration. | 26. Colouring. |
| 3. Inhabilitiveness. | 15. Firmness. | 27. Locality or Space. |
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| 10. Self Esteem. | 22. Individuality. | 34. Comparison. |
| 11. Approbateness. | 23. Configuration. | 35. Causality. |
| 12. Cautiousness. | 24. Size. | * Alimentativeness |

A

GUIDE TO PHRENOLOGY.

CHAPTER I.

Introduction.—Ancient Phrenology.—Opinions of the Ancients respecting the seat of the mental faculties—Situation of the soul, according to the ancient and modern philosophers.—Modern Phrenology, its discovery by Dr. Gall.—Improvements and propagation of the doctrine by Dr. Spurzheim.—Death of Dr. Gall.—Appearances exhibited at the dissection of his body.—List of Phrenological Authors.—List of Drs. Gall and Spurzheim's works.—Phrenological Museums.—Dr. Vimont's.—Uses of these collections.

FROM the various works which have appeared respecting this science, the public have been led to suppose that it is of recent origin. Such is not the fact; as the ancients had imperfect ideas of a system analagous to that broached by those illustrious anatomists and physiologists Drs. Gall and Spurzheim, and which is admitted by these gentlemen in

their writings; yet, it is *original*, as regards Dr. Gall; consequently, I shall first relate the opinions of the ancient authors, and then Dr. Gall's own description of the foundation of phrenology as regards himself.

Ancient Phrenology.

A plurality of organs existing in the brain appears to have been admitted by philosophers of all ages, and is so, even by the most violent opponents to this science of the present day; and different seats were assigned as the abode of these faculties. They placed the rational soul in the head, and the irrational in the abdominal viscera. The cerebral ventricles have always been supposed of great importance. The physicians of Arabia assigned *common sense* to the anterior cavity, in the second *imagination*, in the third *judgment*, and in the fourth *memory*. For several centuries the cerebrum was considered the *organ of perception*, and the cerebellum that of *memory*, the strength of which was inferred from the tuberosity of the occipital bone.

ST. GREGORIUS NYSSERIUS, in order that he might explain the cause why the functions of the mind are not disturbed, although the different senses propagate different impressions, compared the brain to a city with many gates and a number of streets.

NEMESIUS, the first bishop of Emesa, in

the reign of the emperor Theodosius the Great, laid it down to his disciples as a general rule, that *sensation* has its seat in the anterior, *memory* in the middle, and *understanding* in the posterior ventricles.

ALBERTUS MAGNUS, archbishop of Ratisbon in the 13th century, delineated a figure of the human head, on which he indicated the seats of the different mental faculties. *Common sense* he placed in the forehead, as in the first ventricle of the brain, *cogitation* and *judgment* in the second, and the moving spirits in the third.

PETER DE MONTAGNANA and John Rohan de Retham in 1491 and 1500 published a small tract on the faculties of the brain. Their terms may not be unaptly compared to those at present adopted by phrenologists; they terminate in the syllable *iva*; for example, the local seats of the mind are determinately indicative of each. These philosophers also, like Magnus and Gall, exhibited a head, on which they delineated several organs; among which may be mentioned the

Cellula imaginativa.

—— communis sensus.

—— æstimativa, or cogitiva.

—— rationalis.

—— memorativa.

BERNARD GORDON and Lodovico Dolci published similar delineations. Both placed

common sense in the forehead, and imagination behind. According to Dolci, understanding was in the cerebellum, and memory occupied a lower seat in the neck. Bernard Gordon placed the *cellula cogitativa* at the vortex.

According to SERVETI, the anterior ventricles receive the images or impressions from without; the third ventricle is the *seat of thought*, the *Aqueductus Sylvii*, the *soul*, and the fourth ventricle *memory*.

Dr. WILLIS was of opinion that the *corpora striata* was the seat of *sensation* and *attention*, the medullary matter of *memory*, *corpus callosum* of *reflection*, and that the *moving spirits* emanated from the cerebellum.

CHARLES BONNET considered each fibre of the brain as its particular organ.

BOERHAAVE supposed that imagination and judgment were attached to different seats; for this reason, that the former was active in dreaming, and the latter in watching

BARON HALLER and Van Swieten* fancied the internal senses occupied different places in the brain, at the same time considering its organization too complicated and too difficult of investigation, to permit us to entertain any hope that we should ever be able to point out the seats of judgment, memory, or imagination.

* Van Swieten, t. ii. p. 454. "Quis memoriæ et rationis sedem in hoc mirabili et intricatissimo organo determinare poterit?"

PROFESSOR MAYER, of Franckfort on the Oder, supposed it probable that the soul exercised its different faculties in different parts of the brain, and was disposed to look on the cineritious substance as the organ of memory, and on the cerebellum as the instrument of abstract ideas.

PROCHASKA believed it more than probable that each internal sense was attached to a particular organ.

PLATNER spoke of two organs of the soul, a superior and an inferior.

MALLACARNE could not imagine the medullary substance of the brain as every where adapted to receive the separate impressions; he denied the central point of nerves, considered the cerebellum as the seat of intellectual faculties, whose strength he estimated every where according to the number of lamellæ of which this part was composed.

REDEMANN, Wrisberg, Söemmerring, and an immense number of physiologists and philosophers, have admitted a plurality of organs, and maintained that different parts of the brain were destined to dissimilar functions.*

The opponents of phrenology have charged this science with propagating the doctrine of materialism, which is not the case; and therefore to refute it, I will relate the opinions of

* Spurzheim's Phrenology, p. 67.

the ancients who actually believed the soul to have a material existence in the brain. Among whom I may mention Solomon, St. Paul, the fathers of the church, heathen philosophers, and most Christian moralists. Some called the soul the power by which the body grew and was maintained, and supposed it to be diffused in every limb and artery, in every atom of which we are composed. Some divided the soul, and allotted to its parts different regions, analogous to its particular functions in those parts; placing some of it in the thorax, some in the abdomen, some in one part of the head, and some in another. Pythagoras and Plato fixed it in the brain; the Stoics and Aristotle in the heart; Erisistratus in the meninges; Herophilus in the great ventricles of the brain; Serveto in the aqueduct of Sylvius; Suranti in the third ventricle; Van Helmont in the stomach; Descartes in the pineal gland; Schellhammer at the origin of the spinal marrow; Drelin-court in the cerebellum; Lancisi in the corpus callosum, or in the great commissure; Willis in the corpora striata; Vieussens in the centrum ovale; Ackermann in what he calls the *Sinneshügel*, or tubercles of the senses; Psorri in a very subtle fragrant juice, which, according to him, is found to exist in the brain. All these ridiculous theories only prove that we are unacquainted with the

soul, or its residence; and every system of philosophy has attached to it some material organ. Yet none of these are accused with materialism; and why then should phrenologists, who have attempted no bolder change than merely to proclaim what are the innate faculties of man, and what are the organs by means of which they act, be falsely accused of saying that the soul is matter. They never made such an assertion, any more than anatomists, who tell us that motion depends on the apparatus of nerves and muscles, say that motion is matter. In the phrenological doctrines, there is not a tenet which alters the position either of fatalism or of materialism; and yet futile minds accuse us of wishing to establish both these heresies.

Modern Phrenology.

Having said thus much of the ancients, it is now time to return to Dr. François Joseph Gall. This eminent man was born at Tiefenbrunn, in Suabia, on the 9th of March, 1757; and to use his own words, he says:—“In the ninth year of my age, my parents sent me to one of my uncles, who was a clergyman in the Black Forest, and who, in order to inspire me with emulation, gave me a companion in my studies. I was, however, frequently reproached for not learning my

lesson as well as he did, particularly as more was expected from me than from him. From my uncle, we were both put to school at Baden, near Rastadt; and there, whenever our task was to learn by heart, I was always surpassed by boys, who, in other exercises, were much my inferiors. As every one of those who were remarkable for this talent had large and prominent eyes, we gave them the nick-name of *ox-eyed*. Three years after this, we went to school at Bruchsal; and there again the ox-eyed scholars mortified me as before. Two years later, I went to Strasburgh, and still found that, however moderate their abilities in other respects, the pupils with prominent eyes all learnt by heart with great ease."

"Although," continues Dr. Gall, "I was utterly destitute of previous knowledge, I could not help concluding that prominent eyes were marks of a good memory; and the connection between this external sign and the mental faculty occurred to me. It was not, however, till some time afterwards, that, led on from observation to observation, from reflection to reflection, I began to conceive, that, since memory has its external sign, so the other faculties might as well have theirs. From that moment, any person remarkable for any talent, or for any quality, became the subject of new attention, and all my thoughts

were directed to a minute study of the form of their heads. Little by little, I ventured to flatter myself that I could perceive one constant shape in the head of every great painter, of every great musician, of every great mechanic, &c. severally denoting a decided predisposition in the individual to one or other of those acts. In the meantime I had commenced the study of medicine, where I heard much about the functions of the muscles, viscera, &c. but *not a word about the functions of the brain*. My former observations then recurred to me, and led me to suspect, what I afterwards proved, that the form of the *skull* is entirely due to the form of viscus it contains. From that moment I conceived the hope of being able one day to determine the 'moral and intellectual faculties of man,' by means of his cerebral organization, and to establish a physiology of the brain. I therefore resolved to continue my researches, until I should attain my object, or find it impossible. The task would have been less difficult, had I abandoned myself entirely to nature; but I had already learned too much of the errors and prejudices then taught upon those subjects, not to be biassed by them; and I was still further entangled by the doctrines of the metaphysicians, who teach that all our ideas come from the senses, and that all men are born alike, that education and accident alone

make them differ. If this be true, said I, no faculty can have an external sign; and to study the brain, its parts, and its functions, is absolute madness. Still I remembered my former observations. I knew that the circumstances in which my brothers and sisters, my school-fellows, my playmates, had, from their infancy been placed, were all alike, I saw that education was bestowed on some persons, that others had talents without it. I observed a proportionate variety in the dispositions of animals. Some dogs are born hunters, while others of the same litter cannot be taught. Some are peaceful, some ill-tempered. In birds there is a similar diversity. The whole animal kingdom spoke then in favour of my surmises, and I resolved to prosecute my plan. It was not till thirty years had been spent in uninterrupted study, in observing men of every description, and in many countries, men remarkable for some talent or defect, for some vice or some virtue, in studying inferior animals domestic or wild, the inhabitants of air or of earth, that I ventured to publish them in one comprehensive work.”*

Such is the account which Dr. Gall gives

* See a most able review of Drs. Gall and Spurzheim's works, in the *Foreign Quarterly Review* for February, 1828; which embraces in the most impartial manner, a review of all the arguments *pro* and *con*, respecting phrenology.

of the origin and progress of his discoveries. We have heard and seen prodigies of music, of painting, of calculation, of every single talent, in very unripe infancy. We know that wonders of very early learning have existed; but there is not upon record a person, who, at the age of nine, caught the first glimpse of a system which he afterwards made the study of his life; of a system which, as Dr. Spurzheim justly observes, must, if true, "absolutely and entirely change the philosophy of the human mind, and make the study of mankind a new study."

The successive steps by which Dr. Gall proceeded in the prosecution of the study of phrenology, are worth notice. He did not, as some have supposed, first dissect the brain, and pretend by that means to discover the seats of mental powers; nor did he, as others have conceived, map out to the skull the various compartments as they appear in the bust, and assign a faculty to each, according as his imagination led him to conceive the place appropriated to its power. On the contrary, he first noticed a concomitance between particular talents and dispositions, and peculiar forms of the head; he next ascertained, by removal of the *calvaria*, that the figures and size of the brain are indicated by these external forms; and it was only after these facts were determined that the brain was

minutely dissected, and information thrown upon its real structure.

Before Dr. Gall had received the aid which the collateral sciences could throw on his doctrine, and supported chiefly by the plain fact, that a certain form of the head is constantly accompanied by a particular mental power, he began to communicate his knowledge to others. At that time he was established as a physician at Vienna, a city never remarkable for the brilliancy of its scientific luminaries. His auditors were few, among whom were professors Froriep, Walther, and Martens, who published accounts of what they heard; and lastly, the most illustrious, Dr. Spurzheim, who, already advanced in the study of physic, became his pupil in 1800, and in 1804 his associate. In 1805, they travelled through more than 80 towns in Germany, Holland, and Switzerland, never stopping till they reached Paris. One of the principal features in these travels was his visit, among other prisons, to that of Berlin and the fortress of Spandau; on the 17th of April, 1805, in the presence of the municipal authorities, he examined the heads of upwards of two hundred culprits, whom he never before saw, and of whom he gave accurate details of their characters; and on the 20th he visited the fortress of Spandau, in presence of the illustrious Hufeland, and inspected the heads of 470

persons, with similar results. At Paris, a commission of the institute was appointed, at the head of which was Baron Cuvier ; but this eminent man, like the vicar of Bray, in the reigns of Henry, Mary, and Elizabeth, who was of any religion, Catholic or Protestant, so that he could keep his vicarage. It was the same with Cuvier ; knowing the Emperor Napoleon not to be a friend to this science from not understanding it, he, with his colleagues, drew up one of the most lame and trumpery reports that could be penned, so as to call forth an able answer from our philosophers, in which they very properly charged the commissioners of not having repeated their experiments, and founding their report on false grounds. Such was the reception which they met with from the most celebrated philosophical society in Europe.

In November, 1807, our philosophers delivered their first course of lectures in Paris, which excited great interest ; but the tyrannical ignorance and stupidity of the Bourbon government in 1824, like that of Austria in 1805, prohibited the delivery of all lectures without its special permission : hence Dr. Spurzheim was obliged to confine himself to private conversations at his own house. Such a disgraceful proceeding must have excited disgust in the mind of Dr. Spurzheim, and no doubt caused him to form the resolution of

propagating phrenology, and residing in the land of liberty—i. e. Great Britain. In London, Bath, Bristol, Cork, Dublin, and Scotland, he dissected the brain, and explained the principles of the science ; and found a warm advocate in the person of the late lamented Dr. Barclay, in Edinburgh, as also in Mr. Combe, and a ridiculous and ignorant opponent in the Edinburgh Review, whose arguments against it have hitherto only exposed his folly and impudence.

In Great Britain, phrenology has found able advocates and teachers. It was originally denominated *craniology* ; but was changed by Dr. Forster in 1815 to the more appropriate term of *phrenology*, which it has ever since retained.

Aided by the success he met with at Edinburgh, Dr. Spurzheim used to say to the Scotch, “ You are slow, but sure ; I must remain some time with you, and then I’ll leave my fruits to ripen in your hands. This is the spot from which, as from a centre, the doctrines of phrenology shall spread over Britain.”

His prediction is now truly verified. Societies and journals have been established for its more free cultivation in London, Exeter, Manchester, Liverpool, Hull, Cork, Dublin, Paisley, Dundee, Glasgow, and Edinburgh.

At Calcutta exists a Phrenological Society ; as also in the United States, a Professor of Phrenology is instituted in one of the American universities ; and Dr. Caldwell, professor of medicine in the university of Pennsylvania, has edited a work called “Elements of Phrenology,” and delivered lectures in Baltimore, Washington, &c. In Copenhagen it is propagated by Drs. Otto and Hoppe.

This is a brief outline of the history of phrenology, and I have now to record the

Death of Dr. Gall.

“This distinguished individual was above the middle stature, and of rather muscular frame ; his forehead high and broad, with an amiable and prepossessing countenance. During many years he was able to give himself up to intense application, with good health, except two or three attacks of gout, and some derangements of his digestive organs ; but of late years his gait had become very heavy, and when he ascended a staircase, he experienced a sense of suffocation, frequently accompanied by violent palpitations. These symptoms were aggravated within the last eighteen months, and he was compelled to keep himself very quiet, to observe an abstemious regimen, and occasionally to lose blood. It was now understood that he laboured under hypertrophy of the

heart, with a dilatation of the left ventricle. After some months, however, he was able to resume his former avocations; and in November, 1827, he commenced the delivery of a private course of lectures, and continued it, without interruption, until the 3rd of April, on which day, after returning home he experienced symptoms of cerebral congestion; and on the 20th, had a distinct but slight paralytic affection. He continued with various degrees of alternate improvement and aggravation of the symptoms, till the 21st of August, 1828, when he expired.

Appearances on Dissection.

On examining the body after death, independently of the disease of the chest (which consisted of a morbid enlargement of the heart, with incipient ossification,) the bones of the skull were found to be at least *twice* their natural thickness. The pia mater was infiltrated with serum, and the arachnoid raised by the effusion, all over the surface of the hemispheres. At the base of the skull four or five ounces of fluid were found. The brain, which (should have been) was not dissected, weighed 2lb. 7oz. 10½dr. The right side of the cerebellum was rather larger than the left, and contained a small fibro-

cellular tumour, which internally was of a bony structure.*

It is intended to erect a monument to the memory of this eminent and amiable character, in the cemetery of Pere la Chaise, at Paris.

Phrenological Authors.

Some incorrect and vague reports of Dr. Gall's doctrine appeared in the periodicals of the day, shortly after the commencement of his lectures at Vienna in 1796 ; but it was not till 1808, when a thin octavo, entitled, "A Sketch of Dr. Gall's new system of Physiognomy," was published anonymously, that it was possible for the public in this country to obtain any just notions respecting it. In 1815, Spurzheim published his "Physiognomical System," chiefly compiled from the larger work printed at Paris. This work was severely treated by those sapient gentry, *the Edinburgh Reviewers*. The most obvious anatomical discoveries were positively denied, and the new view of the mental faculties treated with scorn ; but *pulchrum est benefacere reipublicæ*, even unintentionally, Mr. George Combe of Edinburgh, had his attention directed to Phrenology by this *tirade*. For a time the bold averments of the Edin-

* *Revue Encyclopedique*.

burgh reviewers obtained credit; but Mr. Combe, by appealing to nature and facts, became convinced of the substantial truth of the science, and in 1819 circulated his "Essays on Phrenology" among the *Athenienses* of the North. This work was most extensively read. Indeed, to this effort we may attribute a great increase of phrenological inquiry, and the establishment of societies for its diffusion and cultivation. Mr. Combe having set the example, many other eminent literary characters aided its progress; but my limits permit me only to mention the names of Sir J. Mackenzie, F. R. S. E., Drs. A. Combe and Poole, Messrs. Scott, Simpson and Welch, of Edinburgh; Drs. Elliotson, Moore, and Epps; Messrs. Tulk, Maugham, Wheatstone, and Crook,* of London; Drs. Barlow, of Bath; Allen, late of York; Cameron of Liverpool; Holland of Manchester; Alderson of Hull; and Butter, F. R. S., of Plymouth; Mr. Carmichael, of Dublin; Dr. Abell of Cork; Drs. Bailly and Fossati; M. M. Royer, Chénevix and Broussais, of Paris; Drs. Otto and Hoppe, of Copenhagen; Patterson of Calcutta; Sibbald of the Mauritius; and Professor Caldwell, of Lexington, United States.†

As my history of Phrenology would be

* Author of "A Compendium of Phrenology," from which this list of Authors is extracted.

† Ibid. page 6.

imperfect, were I to omit mentioning the splendid works that have issued from the laborious researches in the sciences of Anatomy, Physiology, and Phrenology, by Drs. Gall and Spurzheim; I subjoin a list of their Labours:—

By Dr. Gall.

Sur les fonctions du cerveau, et sur celles de chacune de ses parties, avec des observations sur la possibilité de reconnaître les instincts, les penchants, les talents ou les dispositions morales et intellectuelles des hommes et des animaux, par la configuration de leur cerveau et de leur tête. Paris, 1825, 6 vols. in 8vo.

By Dr. Spurzheim.

1. Observations sur la Folie 8vo. Paris 1818.

2. Observations sur la Phrenologie, 8vo. do.

3. Essai philosophique sur la nature morale et intellectuelle de l'homme.

4. Essai sur les principes élémentaires de l'Education, 8vo. Paris, 1822*

5. Phrenology in Connection with the Study of Physiognomy. Part I. on Characters. In royal 8vo. with 34 plates.

6. Outlines of Phrenology.

7. Phrenology, or the Doctrine of the Mind; and of the Relations between its Manifesta-

* This is also published in English.

tions and the Body. With a Frontispiece and 14 Engravings, 8vo.

8. A View of the Philosophical Principles of Phrenology.

9. The Anatomy of the Brain; with a General View of the Nervous System, 8vo. with 11 Plates.

By Drs. Gall and Spurzheim.

1. Recherches sur le Système Nerveux en général, et sur celui du cerveau en particulier. Paris, 1809. 4to.

2. Anatomie et Physiologie du Système Nerveux en general, et celui du Cerveau en particulier. Paris, 1810, 1819, 4 vols 4to. with 100 folio plates.

Phrenological Museums.

The principal Phrenological Museums are those formed, 1. by the late Dr. Gall at Paris. 2. Mons. Vimont, M.D., a physician at Caen, originally an opponent to Phrenology, but having attended Dr. Gall's lectures at Paris, he left it with strong prepossessions against his doctrines, and on returning to Caen, prosecuted his researches with the express object of refuting them; but after the fullest investigation, his inquiries terminated in making him a thorough convert to the system, and the formation of a splendid museum, containing more than 2,000 skulls of the mammalia and birds modelled in wax, casts of brains, and near 300 original drawings made by himself;

together with a valuable series of observations.* These are the fruits of several years research into the doctrines of Drs. Gall and Spurzheim, relative to the seat of the moral, mental, and intellectual faculties of man and animals.† 3. Dr. Spurzheim. 4 and 5. The Phrenological Societies of London and Edinburgh. 6 That of Messrs. R. and J. Childs, of Bungay, consisting of about 300 casts, mostly from living persons. 7. Dr. Wright of New Bethlehem Hospital, mostly from lunatics, and very interesting. 8. Mr. Crook of Lisson Grove. 9. My own, containing near 100 casts and skulls of man and animals. 10. Mr. De Ville of the Strand, London. And 11. Messrs. L. O'Neill, Canongate, Edinburgh: the two last are commercial, and very extensive.

I shall conclude this division of my work by quoting the words of Mr. Crook, in whose observations, I perfectly coincide. Speaking of Phrenological Museums, he says, The increase of such collections is greatly to be desired. In the hands of a scientific

* I am informed since the above was sent to press, Dr. Vimont is making preparations for the publication of his observations, to be splendidly illustrated. This will confer a great benefit to the science of Phrenology, and tend towards its further cultivation and elucidation.

† Foreign Quarterly Review, vol. ii. p. 382.

phrenologist, every new specimen affords a mean of confirming truth, or of rectifying any mistake occasioned by a too limited acquaintance with the vast range of objects embraced by the science. As this range extends from the lowest animal to the highest tribe of the vast faculty of man, those persons visiting remote countries, or who observe the peculiarities of any of the races of the Animal world, would confer a valuable boon by recording their observations, and transmitting them, with illustrative specimens, to competent parties. National *crania*, especially of uncivilized or unknown races, are peculiarly desirable ; as also skulls of foreign animals accompanied with a brief sketch of their habits, and distinguished, if possible, as to sex ; as also skulls of singular formation, or extinct tribes. Casts in plaster of any of the above, or from individuals remarkable for any mental excellence or defect. Commanders on foreign stations, and Surgeons, possess great facilities of thus aiding the advance of a science intimately connected with every thing relating to man in his personal or social character.*

* The secretaries of the Deptford, Rotherhithe, Bermondsey, Southwark, and Western Literary and Scientific Institutions, and Mr. Bull, of Binfield, Berks, will kindly take charge of any specimens, drawings, or observations, that gentlemen may feel inclined to contribute to my own collection, which will be carefully preserved, and the names of the donors recorded.

CHAPTER II.

Definition of Phrenology.—Description of the brain in the fœtus.—Also of the same organ in the adult.—Its weight.—Observations relative to the size of the brain in different tribes of animals.

PHRENOLOGY is defined to be a system of philosophy, developing the powers of the human mind; a system founded on facts, ascertained only by consciousness and accurate observation. In fact, the doctrine of this science treats only of mental faculties or powers, but not of actions.

The word Phrenology is derived from the Greek words $\phi\rho\eta\gamma$, mind, and $\lambda\omicron\gamma\omicron\varsigma$, discourse. If we dissect, however, minutely, any organ, all we shall ascertain by such process is a knowledge of the parts of which it is composed; at the same time, it imparts that information, it throws every little light upon the actual offices of the part dissected. For example, by a simple dissection of the eye, we could not discover that its function was to administer to vision; or by ascertaining the structure of the tongue, that it was the organ of taste. So it was with the brain; for anatomists having only dissected this organ, in order to ascertain its component parts, could not, by such a proceeding, give us any infor-

mation relative to its functions. And the metaphysicians having only directed their attention to reflection and consciousness, never discovered the organs of the human mind. Thus we easily can perceive the causes of the comparative ignorance which had prevailed for so many ages, until philosophy received the brilliant information imparted through the labours of the late Dr. Gall, and his worthy coadjutor Dr. Spurzheim, respecting one of the most interesting points in the philosophy of man; that is to say a connexion existing between the mind, and consequently his organic formation.

Notwithstanding the numerous obstacles this science has received by these modes of reasoning, phrenologists have succeeded in endeavouring to avoid them, having compared the mental manifestations with the actual developement of the brain.

The science now laid before the public by its discoverer, and its various professors, consists of a series of facts, and observations founded upon those facts; the principal inferences drawn by 'phrenologists from these results, which are conceived to be permanently established by extensive induction, are the following:—

First, that the organ denominated the brain is composed of an aggregate number of particles, to each of which there exists a

special and determinate function for it to perform.

Secondly, that the brain is the material instrument, and the means alone by which the mind carries on its intercourse with the external world.

Thirdly. The configuration of the brain is ascertained by inspecting the cranium, and the consequent functions of the several portions are easily to be determined by comparing their size with the power of manifesting their mental faculties and abilities.*

A General Description of the Fœtal Brain.

The fœtal brain is a soft medullary mass and of a great size when compared with the dimensions of the other parts of the child. This may be very soon perceived by referring to an infant's head at the period of its nativity. This organ at birth is very easily lacerated, and consequently admits of difficult dissection in its natural state, on account of this softness.

I estimate the size of the infant brain at

* We use the term larger and smaller developement of the different organs as they appear in different individuals: but the principal difference of the larger organs, as *ideality*, *benevolence*, *cautiousness*, &c. &c. amounts to about an inch, and upwards. The Phrenological student should at first attend to such cases.—*Combe's Outlines*, p. 1, 2.

birth to be about one third larger than that of the adult. The average weight, according to the researches of Söemmerring, appears to be about thirteen ounces; and at the end of six years, about $36\frac{1}{2}$ ounces.*

According to Dr. Thomas, the cerebral fibre begins to be formed only in the "first months" of life, then sensation and volition appear; and that it increases generally till the twentieth year, remaining stationary till the fortieth, when it diminishes in size.†

This is the state of the brain‡ at the period of birth, I now proceed to call the attention of the reader to this organ in the adult state.

The Adult Brain.

This, as in the fœtus, completely fills the

* In new-born children, the cerebellum is to the brain as 1 to 9, 10, 13, 20, or more; and in adults, as 1 to 5, 6 or 7. Professor Ackermann maintains that the cerebellum was perfectly developed at the end of the second year. Drs. Gall and Spurzheim have compared the heads and skulls of children, from the ages of two to sixteen years, and have always found that, at these periods, the cerebellum is still imperfectly developed. But we find that, in proportion as the cerebellum increases in size, its functions (*amativeness*) appear.—*Spurzheim's Phrenology*, p. 129.

† London Medical and Surgical Journal, for June, 1829. art. 11, entitled Views of Dr. Thomas's Theory of Temperaments.

‡ Phrenologists are not inclined to form any opinions of the mental faculties of a child, until the age of four

cavity of the cranium, and is a large, soft, fibrous* mass. It has three coverings, denominated the meninges, and divided into two principal portions; that is to say, the *cerebrum* and the *cerebellum*. The cerebrum is subdivided into two hemispheres, and three lobes—an anterior, middle, and posterior; the hemispheres constitute the superior portion, divided from each other by a little slip of the external membranous covering (the *dura mater*) named the *septum cerebri*,† and the lobes form the inferior or base of the brain. This viscus gives origin to the principal portions of the nervous system; and through the medium of its elongation, the *spinal marrow* to all the others. It is now believed to be the source from which all our ideas emanate.

When the medullary,‡ or white portion, is irritated or compressed, those serious evils ensue, which are so detrimental to our existence. The brain is abundantly supplied with blood; indeed, so profuse is this supply, that the

or five years, as the organs are not generally developed until this period.

* This fact was first discovered by Dr. Spurzheim and subsequently confirmed by succeeding anatomists.

† Also called *falx cerebri* by some authors and teachers.

‡ The two principal substances of the brain are the cortical, or external, and the medullary, or internal; the sensibility of this organ is supposed to reside in the latter.

blood has been supposed by some physiologists to circulate through the brain four times greater than in any other part of the body. For this purpose, we find the blood-vessels large and numerous, and it is necessary they should be so; for if the blood flows too rapidly through the brain, or if there is not a sufficient number of vessels to contain it, the intellectual faculties would become disordered; the ideas engendered in a wild, rapid, hurried, and irregular manner; if the exit of the blood from the brain is obstructed, the cerebral functions are suddenly suppressed; for this reason, that the execution of a healthy performance requires a free and perpetual circulation of the blood to support and renovate its powers.*

Aristotle laid it down as a general rule, in which he has been followed by most philosophers, that man possesses the largest brain of all animals. But Söemmerring, a celebrated German anatomist, has proved this opinion to be incorrect, as, for example, we find canary birds exceed us in the proportionate weight of brain. The weight of the brain, according to this physiologist, when compared to that of the body, forms in

† A Lecture Introductory to the Study of Anatomy and Physiology, by H. W. Dewhurst, 1827. p. 17.

| | |
|-----------------------------|--------------------|
| Man | 1-22 to 1-33 part. |
| Apes (<i>Simiæ</i>) | 1-22 |
| Dogs | 1-101 |
| Elephants | 1-500 |
| Sparrows | 1-25 |
| Canary birds | 1-14 |
| Geese | 1-360 |
| Turtles (smallest) | 1-5688 |

This physiologist has endeavoured to correct Aristotle's rule, by saying, that "*Man has the largest brain of all animals, in proportion to the general mass of nerves arising from it.*" Thus the brain of a horse gives only half the weight of that of a man, but the nerves it sends forth are ten times as bulky. The largest brain that Söemmerring ever dissected of the horse genus weighed only 1lb. 4oz. while the average weight of this organ in the human subject, was from 2lb. 5½oz. to 3lb. 3¾oz* I have weighed several at four pounds. But Söemmerring informs us, that he examined above two hundred brains, but found none to weigh four pounds; and Baron Haller estimates its weight at five pounds.† This error must of course affect the account which this author gives of the proportion between the weight of the brain and that of the

* De Corporis Humani Fabrica, tom. iv. sec. 23. and Dissertatio de Basi Encephali.

• Elementa Physiologiæ

body. The weight of this organ compared with that of the body, is in an inverse ratio to that of the subject.*

Dr. Monro found the brain of an ox to be one fourth the size of the human brain.

The brain of the illustrious Lord Byron (without its membranes) weighed six pounds, and contained more medullary substance than ordinary.† That of the late Dr. Gall I have already mentioned.‡

Previous to my leaving this subject, I shall conclude my observations on the structure of the human brain, by inserting the tables of Joseph and Charles Wenzel, § exhibiting a view of the relative weight and proportions of the cerebrum and cerebellum, in single cases, at different periods of our existence; they are as follows:—

* Mr. Lawrence in Rees's Cyclopaedia, vol. v. *art.* Brain.

† Medwin's Conversations with the late Lord Byron. Appendix page 520, sec. 6.

‡ See the preceding chapter, page 16.

§ Extracted from a work, entitled "*Josephus et Carolus Wenzel de Penitori Structura Cerebri, Hominis et Brutorum.* Folio, Tubingæ, 1812:

TABLE I.

RELATIVE PROPORTIONS.

| AGE. | CEREBRUM. | | | | CEREBELLUM. | | | |
|----------------------|------------|------------|------------|------------|-------------|------------|------------|------------|
| | Length. | | Breadth | | Length | | Breadth | |
| <i>Before Birth.</i> | <i>in.</i> | <i>li.</i> | <i>in.</i> | <i>li.</i> | <i>in.</i> | <i>li.</i> | <i>in.</i> | <i>li.</i> |
| Male 3 . . . | 1 | 2 | 1 | 1 | — | 4 | — | 7 |
| Female 6, 7 . . | 2 | 8 | 3 | — | — | 10 | 1 | 3 |
| Male 7 . . . | 2 | 10 | 2 | 8 | — | 10 | 1 | 4 |
| Female 8 . . . | 3 | 3 | 2 | 8 | — | 10 | 1 | 4 |
| <i>After Birth.</i> | | | | | | | | |
| Male, new-born . . | 3 | 2 | 4 | 6 | 1 | 6 | 2 | — |
| another . . . | 4 | 3 | 3 | 8 | 1 | 8 | 2 | 6 |
| Male, 9 months. . | 4 | 11 | 4 | — | 2 | — | 3 | 5 |
| Do. 18 months . . | 5 | — | 4 | 3 | 2 | 3 | 3 | 8 |
| Do. 3, 4 years . . | 5 | 6 | 5 | — | 2 | 5 | 4 | 2 |
| Do. 6 . . . | 6 | — | 5 | 6 | 2 | 6 | 3 | 10 |
| Do. 7 . . . | 6 | 5 | 5 | — | 2 | 6 | 3 | 10 |
| Female, 10, 11 . . | 6 | — | 5 | — | 2 | 3 | 3 | 9 |
| Male, 14 . . . | 6 | — | 5 | 3 | 2 | 8 | 4 | 4 |
| Female, 21 . . . | 5 | 3 | 5 | — | 2 | 4 | 3 | 10 |
| Male, 25 . . . | 6 | 6 | 5 | 9 | 2 | 9 | 4 | 2 |
| Do. 26 . . . | 5 | 10 | 5 | — | 2 | 5 | 4 | — |
| Do. 30 . . . | 6 | 1 | 5 | — | 2 | 6 | 4 | 1 |
| Female, 34 . . . | 6 | 2 | 5 | 5 | 2 | 6 | 4 | 4 |
| Male, 40 . . . | 6 | — | 5 | — | 2 | 6 | 4 | 4 |
| Female, 50 . . . | 7 | — | 5 | 8 | 2 | 6 | 4 | — |
| Male, 57 . . . | 7 | 5 | 6 | 5 | 2 | 9 | 4 | 3 |
| Do. 64 . . . | 6 | 7 | 6 | — | 2 | 5 | 4 | — |
| Do. 70 . . . | 7 | — | 5 | 6 | 2 | 9 | 4 | 4 |
| Do. 80 . . . | 6 | — | 5 | 6 | — | — | — | — |
| Female, 107 . . . | 5 | 8 | 4 | 11 | 2 | 2 | 4 | 11 |

TABLE II.

RELATIVE WEIGHT.

| AGE. | | | | Weight of the Entire Brain. | Weight of the Cere- brum | Weight of the Cerebel- lum. |
|----------------------|---|---------|----|--------------------------------------|-----------------------------------|--------------------------------------|
| <i>Before Birth.</i> | | | | | | |
| | | Months. | | Grains. | Grains. | Grains. |
| Male | . | . | 5 | 720 | 683 | 37 |
| Female | . | . | 7 | 2310 | 2160 | 150 |
| Do. | . | . | 1 | 4960 | 4610 | 350 |
| <i>After Birth.</i> | | | | | | |
| Female, new-born | . | . | . | 6150 | 5700 | 450 |
| | | Years. | | | | |
| Ditto | . | . | 3 | 15240 | 13380 | 1860 |
| Male | . | . | 3 | 13050 | 11490 | 1560 |
| Female | . | . | 5 | 20250 | 17760 | 2490 |
| Male | . | . | 15 | 24420 | 21720 | 2700 |
| Ditto | . | . | 18 | 20940 | 18474 | 2466 |
| Ditto | . | . | 22 | 21826 | 19040 | 2760 |
| Ditto | . | . | 25 | 22200 | 19500 | 2700 |
| Ditto | . | . | 31 | 24120 | 21480 | 2640 |
| Ditto | . | . | 46 | 20490 | 18060 | 2430 |
| Ditto | . | . | 54 | 20580 | 18270 | 2310 |
| Ditto | . | . | 56 | 22590 | 20070 | 2520 |
| Ditto | . | . | 63 | 22500 | 19780 | 2720 |
| Ditto | . | . | 72 | 22620 | 20200 | 2420 |
| Ditto | . | . | 80 | 19080 | 16500 | 2580 |
| Ditto | . | . | 86 | 23970 | 21210 | 2760 |

Notwithstanding the Wenzels were minute and industrious anatomists, yet all their works prove them indifferent philosophers. And without entering into any argument as to the means they adopted to ascertain the functions of the brain, it may be sufficient to state that they contribute *one fact* illustrative of the length and breadth of this organ, for *each* of the specific ages; but as regards the physiological doctrine of cerebral size, being as they believe to be “*the most easily observed*” indication of mental power; it will be obvious that it neither proves nor disproves any thing whatever. Consequently, I shall not waste the attention of the reader by discussing their opinions.

*Observations on the relative size of the brain
in the various orders of animals.*

Throughout the whole order of quadrupeds, observes Mr. Warren,* the relative size of the brain by no means corresponds with the apparent intellect; but as a general rule, and which, with but few exceptions, may be very

* A Disquisition on the nature and properties of living animals, with an inquiry how far our knowledge of anatomy and physiology is consistent with the belief of a future state, and on the intellectual difference between man and brutes. By George Warren, Surgeon. The reader will do well to peruse this work; it abounds with truly valuable and scientific information.

easily explained, we find the relative size of this organ is greatest in the smallest, and least in the largest. The little field-mouse has the greatest quantity of cerebral matter, and nearly equals in proportion that of the human subject. From this animal, the quantity diminishes in every race, up to the largest. Mr. Warren ventures to assert, that should a skull of that antidiluvian animal, the mammoth, be in existence, it would be found to possess a less capacity for brain than any other creature, (with the exception of those in active animals) as the hog, the ox, and the ass, when compared with the horse, possesses double or treble the quantity of brain ; but shows no outward symptom of superior intellect. A similar circumstance occurs with the calf, the brain of which is full three or four times larger than the full-grown ox. Small house-mice have twice as much brain as rats ; and the rabbit twice as much as the hare. The skull of the celebrated race-horse ECLIPSE* possessed a greater quantity of brain than is usually found in that genus of animals ; his feats are well known ;† he presented an unusual quan-

* The skeleton of this animal is in the possession of Mr. Charles Clarke (nephew of that highly talented veterinarian, Bracy Clarke, esq.) of Stamford-street, Blackfriars.

† For a History of Eclipse, see the Farrier and Naturalist for January, 1828.

tity of muscular power, but was not distinguished by any intellectual superiority over other horses.

Among the feathered race, similar circumstances are to be observed. The size of the brain is found larger in proportion in the smallest animals; and we find some of the most diminutive birds, in which it far surpasses in relative proportions the human brain. I may mention, as an example, that minute and beautiful creature, the humming-bird: which, when stripped of its feathers, seems to be nearly all head. Again, Mr. Brookes states in corroboration, that the titmouse possesses proportionately more brain than the gigantic ostrich,* eagle, or vulture; and the brain of the dormouse, more than that leviathan of the deep, the Greenland whale.

There are, however, exceptions to this rule; as an example I may cite the aquatic birds, as the proportions of brain are much less in these than in land birds of equal size: the duck and cock, the eagle and the goose, are illustrations of this fact. In fishes and reptiles we find still less cerebral development than in quadrupeds. The Amphibiæ,

* M S. notes of Mr. Brookes' Lectures on the comparative anatomy of his majesty's late ostrich, at the Zoological Society, delivered in June, 1827.

whose more natural element is through the water, have the least cerebral development ; the turtle has less brain than the tortoise. In these, as in other animals, (with but few exceptions) we find the greatest cerebral development is found in the smallest creatures.*



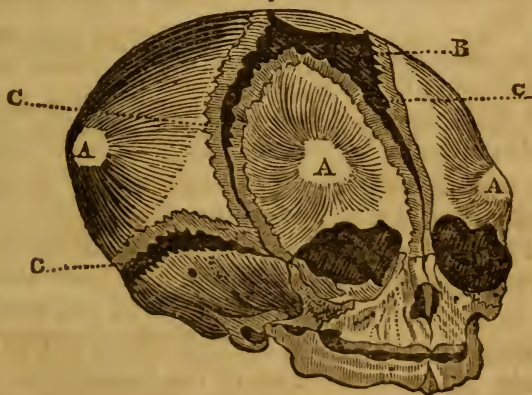
CHAPTER III.

Formation of the bones of the head on the infant brain.—Organic differences of the cranium in the foetal and adult states.—Bones constituting the cranium.—Chemical analysis of bone.—Union of the bones of the head in the adult cranium.—Table of improved nomenclature for the Sutures.

THE bones of the cranium differ in their formation from those of other parts of the

* Warren's Disquisition, p. 127. The reader will reap much valuable information by perusing Dr. Serres' work, entitled, "Anatomie comparée du cerveau dans les quatre classes des animaux vertébrés appliquée à la Physiologie et à la Pathologie du Système Nerveux. Paris, 1827." Also Drs. Gall's and Spurzheim's works on the anatomy of the brain.

body which are formed in the centre of cartilages, while those constituting the skull are formed between two membranes, that is to say, the pericranium externally, and the dura-mater internally. At a very short period after conception, generally about three weeks, we find a nucleus secreted by the arteries of little points of bony matter, congregated together. These increasing as the animal advances in age, form fibres, and then diverge into radii, from the centre of the bone; while the point from which they took their origin, and where the particles of bone were first deposited, are denominated by anatomists the *centre of ossification*. I subjoin an engraving of the foetal skull, which will illustrate my observations.*



* Reduced from the engraving in Mr. Lizar's splendid system of anatomical plates.

EXPLANATION.

A A A The centres of ossification.—*B* The anterior fontanel.—*C C C* The union of the bones by membranes.

*Organic differences of the cranium in the
fœtal and adult states.*

The infant skull differs much in its formation with that of the adult. The peculiarities of the former principally consist in the following:—

1. In the absence of the sutures, and the union of the bones by membranes.
2. Membranous apertures, denominated fontanellæ on the crown and back part of the head.
3. Absence of the frontal sinuses.
4. The two tables of the skull being scarcely visible.
5. The frontal bone separated into two, and the occipital into four pieces.

I shall make a few remarks on the necessity of these peculiarities existing in the fœtus, the absence of which would, in many cases, tend towards a deprivation of its life.

The union of the bones by membranes is advantageous, both to the mother and child; for in labour, where the pelvis of the mother is small, or the head of the fœtus preternaturally large, the edges of the bones overlap each other, so as to diminish the volume of the head, and facilitate its delivery.

At the extremities of the parietal suture, we find membranous apertures denominated fontanel (by the ancients, who, because they felt the pulsations of the brain through them, supposed them to be the fountain of life); these become filled up by bony matter as the child advances in age; and by the time it arrives at a twelvemonth old, a vestige of these apertures is seldom found. They are of the greatest utility to the accoucheur, as by them he is enabled to ascertain the position of the child's head, during its progress in coming into the world.*

Sometimes the fontanel are not closed until a much later period of life. Thus, Caspar Baulino states the anterior fontanel to have been existing in his own wife at the age of twenty-six years.† Other facts of the same nature are on record.

The tables of the skull and the frontal sinus are not visible for some time after birth; the former not until six or seven months, and the latter not until the third or fourth year.

The frontal suture becomes obliterated, and the portions of the occipital bone become united, in a few months after birth.

* As far as my researches have been made in comparative anatomy, I have not met any fontanel except in the human subject.

† Theat. Anatom. p. 280.

Bones constituting the cranium.

The bones constituting the cranium in the adult consist of eight, which are as follows:

The *os frontale*, forming the forehead.

The *os occipitale*, situated at the posterior part of the head.

The *ossa parietalia* and *temporalia** forming the upper and lower portions of its sides and walls.

The *os sphenoidale*, forming the middle of the base of the skull, and on which the middle lobes of the brain are supported.

The *os ethmoidale*, situated at the upper part of the roof, is of a very spongy texture; in the cells of which, the olfactory nerves, being transmitted through the numerous small holes found in the cribriform process, which is situated between the two orbital processes of the frontal bone, in the base of the skull.†

There are eight delicate small bones found within the cavity of the internal ear, (four in each,) and a curious fact I may mention relative to them, that they are of the full size at

* There is a pair of each of these bones, one on each side.

† I have not deemed it necessary to enumerate the bones of the face, the head being divided into the *head* and *face*; suffice it to say, that the bones of the face are 14 in number, and 32 teeth.

the period of birth, as they are seldom found to grow in the after periods of life.*

Chemical Analysis of Bone.

The bones of animals have been analyzed by numerous chemists, among whom I may mention the names of Fourcroy, Vanquelin, Hatchett, Brande, &c. Those of the human subject are stated by Mr. Brookes,† in his valuable lectures on this subject, to be composed as follows:—

| | Parts. |
|-----------------------------------|--------|
| Phosphate of lime | 63 |
| Gelatine | 23 |
| Carbonate of lime | 2 |
| Loss in the examination | 2 |
| | — |
| | 90 |
| | — |

Berzelius ascertained that one hundred parts of bone were reduced to sixty-three by calci-

* I omitted to mention that occasionally additional bones are found in the course of the sutures, and when they occur, *they* have also a *suture* peculiar to them. They also exist in animals. Olaus Wormius was the first anatomist who described them, and they are generally called *ossa wormiana*. They are principally found in the *occipito-parietal suture*, but are equally common in the others.

† Essay on the Formation of Man, by H. W. Dewhurst, appendix, p. 25. Introductory Lecture, p. 6. MS. notes of M. Brookes's Lectures on Anatomy, Physiology, and Surgery. 1821-26.

nation. The uses of the phosphate and carbonate of lime are to give that solidity the bones require to support the superincumbent weight of the body, &c. while the gelatine affords a medium for the blood-vessels and nerves to ramify between the earthy fibres, for the nutrition and growth of the bones.

*Union of the bones in the head of the Adult
Cranium.*

The union of the foetal bones I have already described, but those of the subject in after life are united by means of zigzag lines denominated sutures. I have changed the terms adopted by anatomists, for those which are considered by my pupils and professional friends more likely to be retained in the memory, as they fix the reader's attention to their relative situation, and point out the names of the bones they connect. I subjoin a table of both, with their utility.

| NEW NAMES. | FORMER NAMES. | REMARKS. |
|-------------------|---|---|
| 1 Frontal Suture. | Continuation of the sagittal suture anteriorly. | Existing in the foetus, occasionally in the adult subject, also in many quadrupeds. |

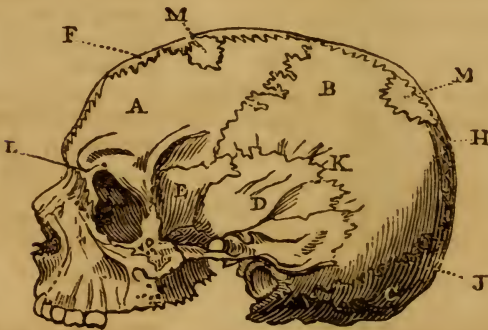
| NEW NAMES. | FORMER NAMES. | REMARKS. |
|------------------------------|-------------------------------------|--|
| 2. Fronto-Parietal suture. | Coronal suture | Connecting the frontal and parietal bones together. |
| 3. Parietal suture. | Sagittal suture | Uniting the two Parietal bones. |
| 4. Occipital suture | Continuation of the sagittal suture | This is found in the fœtus, occasionally in the adult. I never saw, however, a case. But two are related by Vesalius and Eustachius,* pretty accurately. When it does occur it is contained down to the foramen <i>magnum occipitale</i> . |
| 5. Occipito-Parietal suture. | Lambdoidal suture. | Joining the occipital to the parietal bones. Baron Cuvier† calls this the <i>occipital suture</i> , and Professor Pattison follows him in his anatomical lectures at the University of London. |

* Monro's Osteology, by Dr. Kirby. Elements of Anatomy by Alex. Monro, M.D. vol. i. 1825. M.S. notes of Professor Pattison's Lectures.

† Cuvier's Lectures on Comparative Anatomy, translated by Dr. Macartney, vol. i. 1802.

| NEW NAMES. | FORMER NAMES. | REMARKS. |
|-----------------------------|-------------------|---|
| 6. Temporo-Parietal suture. | Squamous suture. | Connecting the Temporal to the Parietal bones. Cuvier & Pattison call this the <i>temporal suture</i> . |
| 7. Facio-Cranial suture. | Transverse suture | Connecting the bones of the cranium to those of the face.* |

The following engraving will point out more clearly the situations of the bones, and their corresponding sutures.



* Originally inserted in the London Medical and Surgical Journal for November, 1828, from which it was copied by the London Medical Reporter for December, 1828, and was mentioned with approbation by the editor, who warmly recommended its adoption.

EXPLANATION.

| | | |
|--------------------------|---|----------|
| A.—The Frontal | } | Bones. |
| B.—The Parietal | | |
| C.—The Occipital | | |
| D.—The Temporal | | |
| E.—The Sphenoidal | | |
| F.—The Frontal | } | Sutures. |
| G.—The Fronto-Parietal | | |
| H.—The Parietal | | |
| J.—The Occipito Parietal | | |
| K.—The Temporo-Parietal | | |
| L.—The Facio-Cranial | | |
| M.—The Ossa Wormiana | | |

My limits not permitting me to give a further description of the cranium, I cannot do better than refer the reader to Professor Charles Bell's invaluable work,* where this subject is discussed at great length. My object being here to give a brief description of the formation of the bones of the head, as I omitted to mention that being formed upon the brain, they as a matter of course assume its shape, and, by examining its exterior, a correct judgment of the mental faculties can be formed in nine hundred and ninety-nine cases out of every thousand.

* Animal Mechanics, pt. i. ch. i. Published under the superintendence of the Society for the Diffusion of Useful Knowledge.

CHAPTER IV.

Observations on the Configuration of the Brain and Cranium in different Nations.—Introductory Remarks.—1. The European and Western Asiatics.—The Georgian, Circassian, Scotch, Germans, Swedes, Russian, Italian, Turkish, and French Crania.—2. The Mongolian Variety.—Blumenbach's general description.—Burat, Esquimaux, Chinese, and Hindoo skulls.—Phrenological description of the Hindoo skulls.—Ancient Egyptians.—3. The Ethiopian variety.—Distinguishing characters.—Caffre and Negro skulls.—Their Phrenological Characters.

IT is only of late years that this subject, which offers a most important and interesting field of investigation, especially as connected with the study of Phrenology, has been examined with that attention it deserves. With the exception of a few desultory observations scattered through the works of different writers, Daubenton* was the first who attempted to give any general remarks on this subject; and this, indeed, is more

* Sur la difference du grand trou occipital dans l'homme, et dans les autres animaux. *Memoirs of the Royal Academy of Sciences. Paris, 1764.*

important in pointing out the differences between the human structure and that of animals, than in defining the characters of the cranium in the different cases of mankind. Camper* has attempted a more systematic account of the national forms of the cranium. His observations are interesting and ingenious; but we are indebted to the celebrated professor Blumenbach of Gottingen,† for a most complete body of information on this subject, which he has been enabled to illustrate by means of a collection of above 100 specimens of the skulls of different nations, from all parts of the globe.‡

Every individual possessing common sense, must have observed the striking varieties occurring in the slope of the foreheads of different

* See the 1st vol. of *Kleinere Schriften*; his *Naturgeschichte des ourang outang*, and particularly his *Dissertation physique sur les differences réelle que presentent les traits du visage chez les hommes de differens pays et de différens ages*. Utrecht, 1791.

† His admirable work, "*De generis humani varietate nativa*," contains a short sketch of the various nations; but he has treated the matter at great length, and with more minute detail in an express work, where the various crania are represented of their natural size. This book is entitled, "*Decades craniorum diversarum gentium illustratæ*." Gottingen, 1790, 1800, 4to.

‡ The reader will derive much valuable information in the perusal of Mr. Lawrence's Article, founded on Blumenbach's observations, in *Rees' Cyclopaedia*, vol. x. *Art. Cranium*.

individuals, and we find by applying this fact, in observing the crania of different nations ; that the striking national peculiarities become manifested to our notice, and as the bones of the cranium partake of the form of the viscus it contains, so we can by an inspection of the skulls of any nation, decide upon its character. This has been frequently done by phrenologists, and the result has been, that the opinions they had formed, were in accordance with the history of the nation known already from the observations of travellers.

The limits of this work will not permit me to enter so largely on this subject as I could have wished ; I shall, therefore, content myself by making some observations on the character of the nations, of whose skulls the reader may easily obtain casts.

It is well known that all those peculiarities in the form of the skull, which are most characteristic of particular races, are yet liable to variation ; consequently, we cannot place any dependance on the mode of ascertaining the capacity for cerebral development, according to the facial line of Camper. However, his observations are well worth the attention of the phrenologist, and in his unpublished commentaries on the bones, he observes, that the breadth of the head varies in different nations ; that the heads of Asiatics,

(by which he probably meant the Calmucs) have the greatest breadth; those of Europeans a middle degree; and that the skulls of the African negroes are the narrowest of all.

Blumenbach has made this circumstance the foundation of his arrangement and description of skulls. It does not appear that he was led to it by the suggestion of Camper, but as the result of his own observation, in a long and constant study of his collection. He remarks, that the comparison of the breadth of the head, particularly of the vertex, points out the principal, and most strongly marked differences in the general configuration of the cranium. He adds, that the whole cranium is susceptible of so many varieties in its form, and that the parts of which it is composed, all contributing more or less, to determine the national character, are of such different proportions and directions, that it is impossible to subject all these diversities to the measurement of lines or angles.

The three varieties of forms ascertained by Blumenbach from a vertical examination, are the Georgian, Tungusian, and Negro, (of Guinea) which he exhibits in his work,* as specimens of the Caucasian, Mongolian, and Ethiopic classes. In the first of these he observes, that “the frontal curve is moderately

* Decad. Cranior.

developed, so as to conceal the edge of the orbital cavities; the upper jaw and cheek bones are compressed and prominent.” “In the third, the space between the eyebrows, the anterior surface of the cheek, and the nasal bones, are nearly on the same plane, and the whole face presents an enormous breadth.”

These three forms of skulls differ more widely from each other, than can be found in the human genus, according to all the researches hitherto made by anatomists: but to these three, Blumenbach, in his classification of skulls, and of the races of men to which they belong, has added two others, in many respects intermediate between the three forms already mentioned. In this way five classes are established, which this ingenious and learned writer looks upon as peculiar to five great races or departments of the human family. I shall copy the descriptions which Blumenbach and Monro have given of these five classes as founded principally upon the character of the anterior bones.

1. *Caucasian or European Variety.*

By this term, Blumenbach distinguishes the variety of mankind to which the nations of Europe, and some of the European nations and western Asiatics belong.

Blumenbach's description of the Georgian skull.

“ The head is of the most symmetrical shape, almost round ; the forehead of moderate extent, the cheek-bones rather narrow, without any projection ; but having a direction downwards. From jugal process of the frontal bone ; the alveolar edge is well rounded ; the front teeth of each jaw placed perpendicularly.”

*Dr. Monro's Circassian.**

The contour of the whole skull is elegant. “ The cranial part bears a large proportion to the bones of the face ; the forehead is large and prominent, the facial line is straight, cheek-bones rounded, alveolar arch narrow and not prominent. The zygomatic arches are slender, but not much elevated. The orbits are large and less angular than in other skulls. The alveolar arch is elliptical, but narrow.”

The *Greeks* are included in this class. The cranial part of the skull is very large in proportion to the face ; and the facial line is straight. This we observe even in the Greeks of the present day ; and Blumenbach posses

* A girl of 10 or 12 years of age. It is of singular beauty in its form and proportions, and nearly corresponds with the Georgian skull described by Blumenbach. Monro's Elements of Anatomy, vol. 1. p. 205.

ses an ancient Greek skull, found in Magna Grecia, exhibiting their characters.

The brains of the different European nations, observes Mr. Combe,* differ widely from each other, but a common type characterises them all, and distinguishes them from those of other quarters of the globe. They are decidedly larger than the Hindoo, American, Indian, and Negro heads: and this indicates superior force of mental character. The portion anterior to the ear, connected with the intellectual faculties, and the coronal surface, or the organs of moral sentiments, are more amply developed in proportion to the bare and posterior inferior parts of the brain, the organs of the animal propensities; in short, they indicate a higher natural power of reflection, and a greater natural tendency to justice, benevolence and refinement, than in the others. The features, in which the European brain in an especial degree excels, are *ideality, conscientiousness, causality*, and mirthfulness: these organs are invariably small in the barbarous and savage tribes. The European skull Blumenbach considers as the most beautiful and perfect of all the national crania in the world; and in this point he and phrenologists agree.

* System of Phrenology.

Scotch skulls.

As a specimen of a Scotch skull, I shall describe that of KING ROBERT the BRUCE, found at Dumfermlineabbey.* The skull was reddish-brown colour, and irregular to its surface. When viewed in profile, the frontal sinuses appear very conspicuous, above which the forehead inclines backwards as far as the union of the frontal and parietal bones, over the parietal suture; there is a distinct ridge in the skull, which is slightly arched; and towards the back part of the suture, the skull suddenly slopes backwards and downwards in an oblique direction. The occipital bone is remarkably convex outwardly, and strongly marked. The temporal fossæ are deep and much compressed by the fasciculi of the temporal muscles. The orbits are surrounded by thick bone. The zygomatic arches high and broad, so we have reason to suppose the temporal muscles to have been very strong. The impressions made by the mase-ter muscles on the under-jaw are unusually deep. The breadth from one cheek-bone to the other is equal to five inches. The distance from the most prominent part of the oc-

* Interred 1329, re-interred 1819. A specimen cast may be seen in most phrenological collections, and may be purchased of the Author. In speaking of this skull, it is not phrenologically, as it widely differs from the heads of the present scientific luminaries of modern Athens.

capital bone to the meatus auditorius externus, is about one inch greater, than from the meatus to the most prominent portion of the upper-jaw bone. The under-jaw is strong, and of a square form; and when viewed in profile there is a distinct prominence of chin. A line drawn downwards from the frontal sinuses along the bones of the face to the alveolar processes of the under jaw-bone, is nearly vertical. The angle which the ascending processes of the upper jaw forms with the body of that bone, is nearly at a right angle.*

The principal organs which this skull exhibits, are large combativeness, destructiveness, secretiveness, approbateness, cautiousness, veneration, firmness, moderate benevolence, and small conscientiousness. If we compare the manifestations of these organs, with the character of Bruce as handed down by historians, we shall soon prove them to agree.

The skulls of the Germans, Swedes, Russians and Italians, are not unlike, according to Söemmerring. The Turkish skull is very round, which has been imputed by Vesalius to the early use of the turban. The skull of a Frenchman, in Dr. Monro's museum, is nearly similar in form, but shorter than those of the natives of Britain. But in the Museum of

* Monro's Elements of Anatomy, vol 1. p. 206.

Natural History at Edinburgh, there are sixty skulls, sent from the catacombs at Paris, widely different in size and form. The skull of a Norwegian is singular in shape, and not unlike some of the Negroes, the bones of the face being very large.

2. *Mongolian or Asiatic variety.*

This includes those Asiatics not coming under the first division, as also some of the inhabitants of the northern parts of America, as the Esquimaux, &c.

A General Description of the Skull by Blumenbach.

The skull thin and light, head almost square, cheek-bones projecting outwards; the nose flat; the nasal-bones, and the space between the eye-brows, nearly on the same horizontal plane with the cheek-bones; the upper ciliary arches scarcely to be perceived; nostrils narrow, maxillary fossa slightly marked. The alveolar edge, in some degree, rounded forwards. The chin slightly prominent.*

Burat Skull.

There is considerable variety as to the form of the head in this great class: for in-

* Blumenbach. Pritchard's Physical History of Mankind, vol. 1. p. 168.

siance, the skull of the *Burat* child, represented by Blumenbach, is globular; the bones of the face are broad, it seems to be flattened, and the orbits are large.

Esquimaux Skull.

Those in Dr. Monro's museum were found at different places; two at Repulse Bay, one at Winter Island, lat. 66. long. 83., and another at Iglulick, lat. 69. long. 83. All these skulls are lighter than the negro skull. The two found at Repulse Bay, differ from the others, and more resemble the European skull, and indeed one to the Circassian girl. The cranial part is very large in proportion to the bones of the face; these are not remarkably prominent, and the cheek-bones resemble those of our own country.

The skull found at Winter Island, and that of Esquimaux in the Museum of Natural History, are very similar. The forehead gradually becomes narrower, and when viewed in front, resembles a triangle: the basis is over the orbits. The parietal bones become narrower as they approach the parietal suture.

The temporo-parietal suture is not so arched as in the European. The orbits are large, but the nasal cavity is small; teeth large, but not long; in some cases those in the lower jaw are smaller than in the European.

and are not fixed to the skull, like those of the negro; but in one of the skulls found in *Repulse Bay*, the teeth are small and much worn down. The skull found at *Iglulick*, is a sort of medium between those of *Repulse Bay* and *Winter Island*. The cranial part is large in proportion to the bones of the face; forehead narrow and rather flat, but the skull is broad between the parietal and temporal bones, and rather flat at the lower part of the occipital bone. The superciliary processes are prominent, and overhang the orbits more than usual; the bones of the nose are broad at their connection with the frontal bone; the cheek-bones are broad; zygomatic arches high; nasal cavity large: and in this individual, the *foramen magnum* is unusually small. The forehead is large and not arched at its summit. The orbits larger than in the European, nasal cavity little narrower; the upper jaw-bones over the alveolar processes very concave, and the teeth larger than in the other Esquimaux skulls.

When these skulls are examined in profile, they appear very *full behind*, and especially that from *Iglulick*; and there is evidently a depression on each side of the parietal suture. The centres of ossification are very prominent, and the distance between them is equal to about five inches and a half.*

* *Monro's Elements of Anatomy*, vol. 1. p. 214.

Dr. Pallas has given an excellent account of the Mongols and Calmucks,* and of the inhabitants of Siberia.

Heads of the Chinese.

These are in general of a conical shape, face triangular, chin sharp, upper jaw projecting a little beyond the under; the eyebrows are much arched, eye narrow, oblique, elongated, and half closed, and the roof of the nose is broad. The countenance is generally pleasing, excepting the females of the inferior ranks of society.

Phrenological Description of the Hindoo Skulls.

Dr. Patterson observes, that “ This nation are remarkable for want of force of character, so much so, that a few Europeans overcomes in combat, and holds in subjection millions of that people. The power of mental manifestation bears a proportion to the size of the cerebral organs; and the Hindoo head is small, while the European is large, in precise conformity with the different mental characters. Farther, we find the Hindoo noted for his great respect for animal life; the absence

* See a good figure of the Skull of a Calmuck in Sandifort's Mus. Acad. Lugd. Batav., and also by Fisher.

of cruelty in his disposition, and at the same time he is destitute of spirit and that mental energy, that overcomes obstacles and gives force to command. The European is just the opposite; he lives to a great extent on animals, is fierce in his anger, and is characterized by great combative and destructive vigour. The Hindoo brain indicates a manifest deficiency in the organs of combativeness and destructiveness; while in the European these are very large. The Hindoo is very cunning, timid and proud; consequently, we find secretiveness, cautiousness, and self-esteem, very large. In intellect, the Hindoo is prone more to analogical, than to direct reasoning, is fond of metaphors and comparisons, and little given to discriminating differences; and the organ of comparison we find larger in his head than those of causality or mirth."* Dr. Patterson states, that these facts are drawn from upwards of three thousand observations; this being the case, we must give credence, more especially as his account is confirmed by historical writers on Hindostan.

Ancient Egyptians.

From the vast monuments of the arts and sciences that now remain, we cannot but

* See Dr. Patterson's Paper on the phrenology of Hindostan in the Phrenological translations.

conclude these people to have been highly intelligent and civilized, for we find on referring to the skulls of mummies, that they invariably agree with the European.

3. *Ethiopian or African Variety.*

This class includes all the natives of Africa. The form of the skull in all of these is similar to the Negro cranium described by Blumenbach. The bone is very white, compact, similar to ivory, heavy, and the tables of the skull thicker than those of European skulls.

Distinguishing Characters.

The *distinctive characters* of the Negro skull, are the small size of the cranial part of the bone, in its longitudinal and transverse direction; the retreating and narrow forehead, flatness of the sides of the head; the large size of the temporal bone, and of the temporal ridges of the frontal bone, which are sometimes secreted. Smaller parietal bones than in the European. A flat occipital bone, less temporal bones, and their sutures not so much arched. *Other characters* consist in the great size, thickness and prominence of the bones of the face, prominence of the alveolar processes, oblique direction of the large incisor to the great breadth and height of the zygomatic processes; the retreating

chin, (as famed in the monkey tribe), large nasal cavity, and the foramen magnum occipitale being placed further back, and is larger than in the European skull.

The following table, by Dr. Knox, of the comparative differences of the Negro and Caffre, cannot but be interesting, especially as this gentleman was resident many years in *southern Africa*.

| NEGRO.* | CAFFRE.† |
|--|---|
| Colour generally very dark. | Of a brown colour, or as it were bronzed. Some perfectly black. |
| Hair black, usually called <i>woolly</i> . | Hair black, crisp and woolly, scattered in small tufts over the skull. |
| Head narrow, compressed on the sides. | Cranium narrow, elongated, resembling in outline the <i>female European</i> . |
| Forehead arched | Forehead differing but little from the Negro, i. e. rather retreating, narrow and not high. |
| Cheek bones prominent, Eyes full. | As in the Negro. |

* The description is chiefly taken from Blumenbach, but compared with several Negro skulls in the possession of Dr. Monro.

† Dr. Knox's description is taken from Caffre crania, selected from those killed in the Zuurveld. Under the term Caffre, Dr. K. includes, the Temboo Boshmana, Red Caffres, &c. &c.

NEGRO.

Nose thick, and little distinct from the lips.

Upper-jaw powerful and elongated.

The inferior incisor teeth projecting obliquely.

Excessive fulness of the lips.

Retreating chin.

CAFFRE.

In the greater number nearly as in the Negro; some have less of the Ethiopian physiognomy.

Nearly as in the Negro.

Scarcely the case in the Caffre.

As in the Negro.

Not so much as in the Negro.

Remarks.—The cranium of the Caffre is inferior in most of its measurements to the European. The flat and compressed temporal bones, and often straight temporo-parietal suture, instead of the semicircular as in the European. From this anatomical enquiry, it appears that the Caffre is closely allied to the Negro, and may be called the *Negro* of the *mountains*: there is no admixture of Arab blood in the race.*

PHRENOLOGICAL CHARACTERS.

1. *The Negro.*

The cranium of the Negro rises more evidently in the scale of developement of the moral and intellectual organs, than the New Hollander, as his forehead is higher, and the

* Monro's Elements, page 210.

sentimental organs bear a large proportion to those of the propensities. The organs of philoprogenitiveness and inhabitiveness, are largely developed; as also veneration and hope. The greatest deficiencies lie in conscientiousness, cautiousness, ideality and reflection.

The African tribes exhibit very different appearances in point of civilization; but none can be compared to the progress of the Europeans. Mr. Combe has been informed, that great differences are observed in the natural talents of the Negroes, according to the provinces from which they have been brought. Some parts of Africa yield persons capable of becoming excellent operative mechanics; others, clerks, accountants, &c.; and some mere labourers, incapable of any intellectual attainment.

2. *The Caffre.*

This race is ingenious in several acts; but agriculture is neglected on account of their constant wars. And though their coast is covered with excellent fish, they do not catch them, and indeed have no boats or canoes. Marriage is invariably conducted by sale.

3. *The Boshmen.*

These are represented as “gay, gentle,

and peaceable " in their manners ; yet, they " carry on war " as fiercely as their neighbours. Mr. Campbell once asked one of them this question :—For what end was man made ?

The answer was—For plundering expeditions.*

Could we procure crania of this nation, I should expect to find combativeness, destructiveness, acquisitiveness, secretiveness and firmness, pretty largely developed.

4. *Ashantees.*

According to Mr. Bowditch, this nation displays great activity, and considerable ingenuity of mind ; but is at the same time horribly debased by the most ferocious dispositions, and grossest superstition.

The principal feature in the Africans generally is their superstition. This character, observes Mr. Combe,† corresponds with the development which we observe in the Negro skulls ; for they exhibit much hope, veneration, and marvellousness, with comparatively little power. Their defective causality incapacitates them from tracing the relation of cause and effect ; and their great veneration,

* Leyden and Murray's *Historical Account of Discoveries and Travels in Africa*, vol. ii. pp. 332, 350.

† Combe's *System of Phrenology*, pp. 467-470.

hope, and marvellousness, render them prone to cruelty, and to regard with profound admiration and respect, any object which is represented as possessing supernatural power.



CHAPTER V.

The American Variety of Blumenbach.—Descriptions of the Skulls of the Missouri, Carib, North and South American Indians.—The Malay Variety of Blumenbach.—Descriptions of the Skulls of the New Zealanders, New Hollanders, Natives of Van Dieman's Land and the Pellew Islands, the Ceylonese, distinctions between the Male and Female Skulls.—Table of Measurement of a few national crania.

THE FOURTH, OR THE AMERICAN VARIETY.

In this class Blumenbach comprehends all the natives of America, except the *Esquimaux*.

General Description of the Skull.

This variety approaches to the Mongolian; prominent cheek bones, more arched

and raised than in the Mongole, without being so angular or so projecting at the sides ; the orbits almost always deep, the form of the forehead and vertex often artificially modified, skull generally light.*

Northern Americans.

Cook,† Hearne,‡ Humboldt,§ Lewis and Clarke,|| represent this class as having a low forehead ; and according to Humboldt, the *Chaymas* consider a narrow forehead a mark of great beauty.

Missouri Indians.

Mr. E. James¶ observes, that “ the form of the Missouri Indian is symmetrical and active, in statue equal, if not somewhat superior, to the ordinary European standard : tall men are numerous.”

The Skulls.—The forehead retires remarkably backwards, and the posterior part of the head has a flatness of appearance, attributable,

* Blumenbach, Decad. Cranior.

† Captain Cook's description of the Natives of Nootka Sound.

‡ Journey to the Frozen Ocean.

§ Personal Narrative.

|| Travels, p. 64, when describing the Western Indians.

¶ Edwin James's Expedition to the Rocky Mountains. Vol. ii. and iii. p. 244.

perhaps, to the circumstance of its having rested so constantly during infancy on the surface of a board, or on a scarcely yielding interposed pad or pillow.* The organs of amateness are not very prominent, yet still marked and distinct.

Carib Indian.

In the Carib Indian, we find the head exhibiting a very striking difference from those nations already described. *First*, they are considerably larger than the Hindoos, and in conformity with the principle that size indicates power, the Carib Indians are remarkable for their force of character. The Europeans have repeatedly endeavoured to conquer them to subjection; they have been (to the disgrace of enlightened nations) hunted like the wild beasts of the forest, and have been almost extirpated. But every attempt to engulf them into slavery, as the Portuguese and Spaniards did the Mexicans and Brazilians, have been completely useless. *Secondly*. The forehead is completely depressed in early

* I have a skull of a Nickabar Indian, presented me by a surgeon in the Hon. East India Company's service, who informed me, that this tribe have the posterior part of the head almost perpendicular, from the same cause as the Missouri Indians. Dr. Spurzheim mentions, that he heard of this fact but had never seen a specimen.

infancy, by the parents placing a shingle * on the frontal bones; this pressure causing absorption, the new secreted bones assume the shape of the low receding forehead so striking in this class; † and probably, this is correct, as in some casts of Carib skulls in my Phrenological museum, the depression is greater than others. Humboldt ‡ justly remarks, “that there is no race on the globe, in which the frontal bone is more depressed backwards, or which has a less projecting forehead than the American.” The Carib Indian exhibits a brain prodigiously developed in the regions of combativeness and destructiveness, which are so strikingly deficient in the Hindoo; the former race being as ferocious and murderous, as the latter are mild and inoffensive. This tribe is the most deficient of the reflecting faculties of any that have come under the notice of Phrenologists, and is described “as rushing with unbridled violence on present gratification; blind to every consequence, and incapable of tracing the shortest link in the chain of cause and

* A wooden tile.

† MS. notes of Lectures on Anatomy, Physiology, and Surgery, delivered by Joshua Brookes, Esq., F.R.S. &c. &c. 1821-26.

‡ Personal Narrative. “This extraordinary flatness,” he observes, “is also to be found among nations, to whom the means of producing artificial deformity are totally unknown.”

effect. If we examine the profile of the head of a Carib Indian, and draw a line perpendicularly from the eye to the top of the head, the greatest tyro will observe at one glance, that the principal quantity of brain is posteriorly, consequently, the animal propensities must predominate over those of the intellectual faculties; at the same time it will be observed, that the organs of the moral sentiments are deficient in size.

*Botocudoe Indians.**

This head is not deficient in point of size, for, the circumference, as taken by a string measured twenty-three inches on the cast, from which, says Dr. Monro, one inch should be deducted on account of the thickness of the hair; and it measures from the root of the nose to the occiput, rather less than eight inches (half an inch to be deducted for the thickness of the hair), and from ear to ear, by the calliper-compasses, five inches and three-quarters. The forehead, though not prominent, cannot be said to be low; and indeed, is larger than in some natives of this country, but is narrow; nose aquiline, orbits large and the line of the face nearly straight; it retreated, however, somewhat

* So denominated by the Brazilians.—*Monro*.

near to the chin. The bones of the face are large, the cheeks broad, being equal to five inches and a half, and seemed remarkably so, owing, probably, to the extreme emaciation of the subject before death.*

South American Indians.

The crania brought to Paris, by Humboldt and Boussland, of several of *Atures*, Mexican *Indians* and *Peruvians*, all exhibited the depressed frontal bone.

North American Indians.

The skulls of this tribe differ considerably from those of the Negroes; we find it much higher from the ear upwards, and not so long from before to behind, neither is the forehead so largely developed; but the organs of *destructiveness*, *secretiveness*, *cautiousness*, and *firmness*, are very much enlarged. But *inhabitiveness* and *adhesiveness*, particularly the former, very small. The following is a description of this tribe by Dr. Richardson, who accompanied Captain Franklin in his

* A male and female of this tribe were exhibited about 1824 in Edinburgh; but the man died during his residence in that city. Dr. Monro procured a cast of his head, and wrote the above description.—*Elements of Anatomy*, vol. i. p. 222.

northern expedition:—"He met three distinct tribes of Indians who spoke different languages; but they all resembled each other: the countenances of the men were more different than those of the women, and some of the former had aquiline noses. The form of their heads resembled the Esquimaux; the forehead remarkably narrow, but not low, nor was there any appearance as if pressure had been applied to flatten it; indeed, he observes, that no such custom prevailed amongst these northern Indians, although as I have stated, it prevails amongst those tribes that live more to the south."

The Rev. Mr. Malthus thus describes the character of the North American Indians:—"To fly from an adversary that is on his guard, and to avoid a contest where he cannot contend without risk to his own person, and consequently to his community, is the point of *honour* with the American. The odds of ten to one are necessary to warrant an attack on a person who is armed and prepared to resist, and even then, each is afraid of being the first to advance. The great object of the most renowned warrior is, by every art of cunning and deceit, by every mode of stratagem and surprise that his invention can suggest, to weaken and destroy the tribes of his enemy with the least possible loss to his own. To meet an enemy on equal terms is

regarded as extreme folly. To fall in battle, instead of being reckoned an honourable death, is a misfortune which subjects the memory of the warrior to the imputation of rashness and imprudence. But to lie in wait day after day, till he can rush on his prey, when most secure and least able to resist him; to steal in the dead of the night upon his enemies, set fire to their huts and massacre the inhabitants as they fly naked and defenceless from the flames, are deeds of glory, which will be of deathless memory in the breasts of his grateful countrymen.”*

The exact coincidence, observes Mr. Combe, betwixt the developement of the skulls and character of this people, would lead us to suppose that they represent the national shape. The general size is greatly inferior to the average European head, indicating inferiority in natural mental power. The combination of destructiveness, secretiveness, cautiousness and firmness, corresponds remarkably with their timid, cunning, persevering ferocity; while their deficient sentiments, inhabitiveness and adhesiveness, would account for the looseness of their social and patriotic relations.

* Malthus on Population, book i. chap. 4.

Brazil Indians.

The head of the Brazil Indian bears a great resemblance to the former. The deficiency in size is the same, indicating natural inferiority of mind, and the combinations of organs is similar, only firmness is not so great, but inhabitiveness and philoprogenitiveness are moderate.

These Indians, however, are different from the former tribe, having derived some improvement from education, although not sufficient to supply the defect of native energy. If education has hitherto done little in implanting good qualities, it has done much in eradicating evil ones. These were among the fiercest and most revengeful of the human race; now they are quiet and inoffensive, rarely committing murder, and even the dishonest confine themselves to pilfering.

Mr. Kotser draws the following comparison between the Negro and Brazil Indian:—"The Negro character," says he, "is more decided; it is worse, but it is also better. The Indian seems to be without energy or exertion, equally incapable of great evil or great good. Rich Mulattoes and Negroes are not uncommon; there is no instance of a wealthy Indian, nor did we even see an Indian mechanic. The priesthood is open to them, but to little purpose. Mr. Kotser

heard of only two Indians who were ordained priests, and both died from excessive drinking."

5. THE MALAY VARIETY.

In this class Blumenbach includes the inhabitants of Sumatra, Java, Borneo, New Guinea, New Zealand, New Holland, Van Dieman's Land, and the Islands of the Pacific Ocean, to which Dr. Monro adds the Ceylonese. The complexion of these people is brown, hair black, cranial part of the head small; but the bones of the face and mouth, lips and teeth, are large.

Description of the Skull of a New Zealander.

The New Zealander differs from the New Hollander very essentially in his appearance. Dr. Monro possesses five specimens. The skull, he observes, is thick, hard, and heavy. The cranial part of the skull bears a large proportion to the bones of the face, the frontal bone not much depressed, and is rather broader from side to side than the Negro, but not so much as the European. The temporal muscles arise high on the sides of the head. The occipital bone not so convex as in the European. The breadth from before the ear is greater than that behind it. Ear small and high up in the head.

New Hollander.

The bone is white, of a close texture, hard, and consequently heavy, and the skull is thicker than the European. Orbits rather small, nasal cavities are large; and the anterior part of the skull rises a little above the Carib, but exhibits a lower table deficiency on the regions of the moral and intellectual organs. The organs of the animal propensities are fully developed, while calculation, constructiveness, comparison, causality, and ideality, are remarkably absent.

The character of these people, as exhibited by their skulls, would be described by a phrenologist as possessing considerable energy and determination; but the grossest ignorance, rudeness, grovelling inferiority of character. The talents for architecture and the constructive arts generally, are very deficient, while the sentiments of refinement or elegance, can scarcely be experienced on account of the smallness of the ideal organs. The greatest tyro will perceive on the viewing the New Hollander's skull, and also of the Carib, how much they fall below the European in the reflective, ideal and constructive faculties.

Native of Van Dieman's Land.

These resemble the former, with the excep-

tion of being somewhat smaller. Collins* describes them as not worshipping the sun, moon or stars. "I never," says he, "could discover any object either substantial or imaginary that impelled them to the commission of good actions, or deterred them from the commission of crimes. There, indeed, existed among some of them an idea of a future state, but not connected in anywise with religion, for it had no influence whatever on their lives and actions."

Peron describes them without chiefs, laws, or regular government, or art of any kind; as possessing no knowledge of agriculture; as being quite naked, and having no fixed abode.†

Natives of the Pelew Islands.

Dr. Monro includes them in this great class. To the classical pen of Mr. Keate we are deeply indebted for a most interesting account of the *Pelew Islanders*, a people widely different from the preceding, and possessing in a striking degree all the more amiable dispositions of the heart.

What a contrast do these people present to the inhabitants of Australia, New Zealand, and Van Dieman's Land! In countries, says Mr.

* Account of New South Wales..

† Voy. du Decour. de Terres Austral. tom. i. chap. 30

Keate,* “ which science or the gentler arts never reached, we observe a wonderful disparity. Some are found under that darkness and absolute barbarism, from the sight of which humanity involuntary recoils, whilst others unaided, unassisted, but by mere natural good sense, have not only emerged from this gloomy shade, but have nearly attained that order, propriety, and good conduct, which constitute the essence of real civilization.”

PRINCE LE BOO, whose portrait adorns Mr. Keate's book, is represented as having a fine large forehead, large eyes, broad face, rather short nose, wide nostrils, and a large mouth. The character of this amiable prince has been most emphatically given by Dr. C. Smyth, in his letter to Mr. Keate, wherein he describes the prince's death.—“ Though you cannot bring him back to life, you are called upon (partieularly considering his great attachment to you) not to let the memory of so *much virtue* pass away unrecorded.”

Ceylonese.

This is also included, by Dr. Monro, in this class. Dr. John Davy, who resided four years in that country, an account of which he

* Introduction p. 7.

has published,* observes, “that he could not perceive any remarkable difference in the form of the head from that of the European, but he is not persuaded that it is so.”

In the skull of the Kapitapola,† the Kandian chief, the upper jaw is more prominent than in the European; but Dr. Davy considers this as peculiar to the individual and not characteristic of the nation at large. Dr. Davy adds, that he knew this rebel chieftain well, and had heard his defence when he was brought to trial, which considering the very short time he had for its preparation, was very able and did him much credit; and on the whole, he considers the Ceylonese to be an intelligent people.

The South Sea Islanders afford us an interesting subject for phrenological observation. While the natives of Ceylon, Java, and other eastern nations, have enjoyed the advantages of European intercourse, with mental and religious instruction by the missionaries for several centuries, have scarcely made a perceptible progress towards Christianity, either in faith or morals, while the inhabitants of Otaheite and others of the South Sea Islan-

* Account of the interior of Ceylon and its inhabitants, with travels in that island. By John Davy, M.D., F. R.S., 1821.

† Presented to the Phrenological Society of Edinburgh, by Mr. Marshall. Casts are to be obtained.

ders, have been converted in less than a century from the discovery by the English. Thus the phrenologist would infer, from these facts, that the cerebral development of the intellectual and sentimental organs, is larger in them than in the Malays, New Hollanders, and other eastern islanders; and that, on that account, the doctrines of Christianity were the more readily felt to be congenial to their feelings and understanding, and in consequence more speedily and willingly embraced.

I shall conclude this imperfect sketch in the eloquent language of Mr. Keate. The inquisitive mind of man, says he, too eager after knowledge which his limited faculties can never reach, often *idly asks, Wherefore all these varied gradations in human existence?* But this question will for ever remain unanswered; and he must content himself with being satisfied, that the ways of Providence are conducted with unerring wisdom, to answer purposes beyond mortal comprehension. He will be more wisely employed in feeling with becoming gratitude, that he was not himself destined to be an inhabitant of *Terra del Fuego*, or to add one to the number of the forlorn savages of the *Northern Pole*.

Distinctions between the Male and Female Skull.

There are several marks of distinction between the female and the male cranium.

In the female, the skull is lighter owing to its greater thinness. The cranial part bears a larger proportion to the bones of the face, all of which are smaller, and not so much impressed by the muscles as those of the male; it is narrower anteriorly and broader behind. The alveolar processes are not only smaller, but more of an elliptical form.

The palatine processes of the upper-jaw bone, are more contracted, and the mouth is consequently smaller.

The teeth of the female are smaller and rounder than the male.

The skull of the female, in proportion to the stature of the individual, is greater in circumference, but not so much elevated at the vertex as the male.

The frontal sinus is not so conspicuous, and when opened not so large in their dimensions.

The superciliary processes are not so prominent in the female skull, and according to some authors, the *frontal suture* is frequently found existing.

The above distinctions are distinguishable, according to Söemmerring in very early life.

I have added a table, containing a few measurements taken from individual skulls, by Mr. Combe; but they cannot be given as an exact statement of the average development of the different national crania. They are, however, an approximation to truth, and are sufficient to shew the interest of the investigation. The collections of national crania are yet too limited to enable us to draw average results. The Negro skull is a very favourable specimen, and the European is, perhaps, under the average.*

* System of Phrenology, page 477.

MEASUREMENTS OF A FEW NATIONAL SKULLS.

| NATIONS. | From Philoprogeni- tiveness to Indivi- duality. | From Inhabitiveness to Comparativeness. | From the Ear to Philoprogenitiveness | From the Ear to Individuality. | From the Ear to Firmness. | From the Ear to Benevolence. | From Destructiveness to Destructiveness. | From Secretiveness to Secretiveness. | From Cautiousness to Cautiousness. | From Ideality to Ideality. |
|-----------------|---|---|--|--------------------------------------|---------------------------------|------------------------------------|--|--|--|-------------------------------|
| Hindoo | 6 $\frac{5}{8}$ | 6 $\frac{1}{8}$ | 3 | 4 | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ |
| Carib | 7 $\frac{1}{4}$ | 5 $\frac{1}{4}$ | 4 $\frac{1}{2}$ | 4 | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ |
| New Hollander | 7 $\frac{1}{4}$ | 5 $\frac{1}{4}$ | 5 | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 | 5 | 4 $\frac{1}{2}$ | 4 |
| Negro | 7 $\frac{1}{4}$ | 5 $\frac{1}{4}$ | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ |
| American Indian | 6 $\frac{1}{4}$ | 5 | 3 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 | 4 |
| Brazil Indian | 9 | 5 $\frac{1}{2}$ | 3 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 | 5 |
| European | 7 $\frac{1}{2}$ | 7 | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ |
| Mummy | 7 $\frac{1}{2}$ | 6 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 4 | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 5 $\frac{1}{2}$ | 4 $\frac{1}{2}$ |

CHAPTER VI.

On the comparison of the human skull with those of animals.—Proportions of the cranium and face.—General mental manifestations.—Proofs of the differences of the proportions of the skull and face in man and animals.—Capacity of the skull.—Situation of the Foramen Magnum Occipitale.—Situation of the head in man and animals.—The Occipital Angle.

A VERY striking difference between man and animals consists in the relative proportions of the cranium and face, which are in general indicated by the direction of the facial line of Camper. The two organs which occupy the principal part of the face are those of the *smell* and *taste*. In proportion as these parts are more developed, the size of the face compared to that of the skull, is augmented. On the contrary, when the brain is large, the volume of the cranium is increased in proportion to that of the face. A large cranium and small face indicate, therefore, a large brain, with small organs of *smell* and *taste*; while a small cranium and large face shew the contrary. The nature and mental

character of each animal must depend, in great measure, on the relative energy of its different cerebral functions; it is, in a manner, subdued and mastered by its most powerful sensations.

General Mental Manifestations.

The number and kind of the intellectual phenomena in different animals always corresponds to the degree of the developement of the brain.

The mind of the Negro and the Hottentot, of the Calmuck and Carib, is inferior to the European; and their organization is also less perfect. The large cranium and high forehead of the Ourang-outang lift him above his brother monkeys; but the developement of his cerebral hemispheres, and his mental manifestations, are both equally below those of the Negro. The gradation of organization and of mind, passes through the monkey, dog, elephant, horse, and to other quadrupeds, thence to birds, reptiles, and fishes, and so on to the lowest links of the animal chain.

Since we perceive, then, the relative proportions of the cranium and face indicate also those of the brain, and the two principal external organs, we shall not be surprised to find that they point out to us, in great measure, the general character of the animals;

the degree of instinct and docility which they possess; hence the study of these proportions is of great importance to the phrenologist and naturalist. *Man combines by far the largest cranium with the smallest face*, and animals deviate from these relations in proportion as they increase in stupidity and ferocity.

In animals below man, the face is placed in front of the cranium instead of under it. That cavity is so diminished in size, that its anterior expanded portion, or forehead, is soon lost, as we recede from man. Hence the facial line is oblique, and the angle acute; it becomes more and more so, as we descend in the scale from the human subject; and, in several birds, in most reptiles and fishes, it is lost altogether, as the cranium and face are completely on a level, and form parts of one horizontal line.

The idea of stupidity is associated, even by the vulgar, with the elongation of the snout, which necessarily lowers the facial line, or renders it more oblique: hence the *crane* and *snipe* have become proverbial. On the contrary, when the facial line is elevated by any cause which does not increase the capacity of the cranium, as in the *elephant* and *owl*, by the cells which separate the two tables, the animal acquires a particular air of intelligence, which in reality it does not possess. Hence the latter animal has been

selected as the emblem of the goddess of wisdom; the former is distinguished in the Indian language by a name which indicates an opinion that he participates with man in his most distinguishing characteristic, viz. *the possession of reason.*

A vertical section of the head, in a longitudinal direction, shews us more completely the relative proportions of the cranium and face. In the European, the area of the section of the skull is four times as large as that of the face, the lower jaw not being included. The proportion of the face is somewhat larger in the Negro, and it increases again in the Ourang-outang. The area of the cranium is about double that of the face in the monkeys; in the baboon's, and in most of the carnivorous mammalia, the two parts are nearly equal. The face exceeds the cranium in most of the other orders of mammalia. In the ruminant animals, the area of the face is about double that of the cranium, and it is nearly four times as large in the horse.

The outline of the face, when viewed in such a section as I have just described, forms in the human subject a triangle, the longest side of which is the line of junction between the cranium and face. This extends obliquely backwards and downwards from the root of the nose towards the *foramen magnum occi-*

pitale.* The front of the face, or the anterior line of the triangle, is the shortest of the three. The face is so much elongated, even in the monkeys, that the line of junction of the cranium and face forms the shortest side of the triangle, and the anterior one is the longest. These proportions become still more considerable in the other mammalia.

Situation of the Foramen Magnum Occipitale.

The *foramen magnum occipitale* occupies a very different situation in animals from that which it possesses in the human subject; and its position again differs considerably in the various species. These differences arise chiefly from the ordinary attitude of the body, and form of the head. The head and neck of man being directed vertically, his head is placed in a state of equilibrium on the vertebral column, in order to facilitate its motions, and to maintain it firmly on the point of support, which it possesses in the natural attitude of the body. Hence, this hole occupies in the human subject nearly the centre of the base of the skull; being very little more distant from the front of the jaws,

* The great hole in the occipital bone, for the passage of the spinal marrow from the cranium to its canal in the spinal column.

than from the posterior extremity of the occiput. The position of the head is so favourable to its being held in a state of equilibrium, that if the vertical line of the trunk and neck were continued upwards, it would pass through the top of the head.

In most animals, it is placed at the back of the head; the jaws are considerably elongated; the occiput forms no projection beyond this opening, the level of which is in a vertical line, or at least very slightly inclined. Hence, the head is connected to the neck by its posterior parts, instead of being articulated, as in man, by the middle of its basis; and, instead of being in equilibrium, it hangs to the front of the neck. This structure bestows on quadrupeds the power of using their jaws for seizing what is before them, of elevating them to reach what may be above the head, although they be placed horizontally, and of touching the ground with the mouth, by depressing the head and neck as low as the feet. This latter motion could not be performed by man, even if he were in the attitude of a quadruped; for, if he lowered the head to the ground, he would only touch it with his forehead or vertex.

In several animals, there is some distance between the foramen magnum and the posterior extremity of the occiput; but this interval is no where so considerable, as in the hu-

man subject; and, in proportion as it is increased, does the occipital foramen approach more to the horizontal one.

Animals of the monkey tribe approach more nearly to the human structure in the position and direction of this foramen than any others. In the Ourang-outang, it is twice as far from the jaws as from the back of the head; and it is considerably downwards, so that a line drawn in its level, passes below the under jaw, instead of going just under the orbit, as in man.

The difference in the direction of the foramen may be estimated by noting the angle formed by the union of a line drawn in the manner above mentioned, according to the direction of the opening, with another line passing from the posterior edge of the foramen to the inferior margin of the orbit. This angle is of 3° . in man, and of 37° . in the ourang-outang. The length of the jaws in this animal must exceed that of the human subject in the same proportion. The lower jaw is one fourth of the length of the trunk and head, taken from the vertex to the anus; while in man it is only one-seventh.

The occipital angle is of 47° in the lemur; it is still greater in the dog; and in the horse it is of 90° , or a right angle, the position of the opening being completely vertical.

CHAPTER VII.

Laws and Activity of the Mental Powers.—Application of the Principles of Phrenology.—Practical Observations relative to the Size of the Organs.—Mr. Combe's average Table of Measurements.—Rules for ascertaining the Differences in the Dimensions of the Organs in Different Heads.

THE tables exhibited in the preceding chapter will contain an enumeration of the primitive faculties or powers hitherto discovered, and the organs of which, or those portions of the cerebral mass with which they are conceived to be connected in the relation of instrument or functions, are either established by a wide and legitimate induction, or nearly ascertained and rendered highly probable by numerous observations. Whether other faculties and their associated organs shall be hereafter added, time alone can determine. It is quite obvious, that, proceeding on the conviction of these having been demonstrated to exist, we can by means

of them give a very copious and lucid explanation of the diversities in the characters and conduct of mankind. Generally speaking, these diversities depend, not on the mere predominance of one of the powers, but on the proportion which they bear to each other, and the relative intensity in which they are exercised. As to the modes of activity, it will be enough to suggest some of the most important laws:—*First*, the faculties of the propensities and sentiments are excited by external object, according to the constitution of our own nature and that of the world around us. In this case, a feeling propensity or sentiment is produced within us, in a manner quite involuntarily, though the conduct which we adopt in consequence may be subjected or influenced by our will, or by other principles equally a part of our constitution. *Secondly*, these faculties admit of what may be called internal excitement, or are roused by activity, independently of the presence and operations of external objects. Here, too, our feelings may not be within our own controul. However, they are often so; *i. e.* they can be checked or encouraged; but in either case, our actions, which in reality seldom result from the excitement of a single power, are likewise so far dependent on our will, that we must be reckoned, and in point of fact do reckon ourselves, unaccount-

able beings. *Thirdly*. These faculties are capable, though in a manner inexplicable, of exciting one another; and our consciousness of this fact, or rather our consciousness of having such a power, is in reality at once an element in the formation of character, and an indefeasible evidence to our own minds that we are responsible creatures. *Fourthly*. The keen sensation is applied only to those faculties of which he had just spoken, viz. the propensities and sentiments, and is properly an expression for nothing more than the activity of any of them, however excited; or in other words, signifies an affection of the nervous system, of which no explanation can be given, but which must be experienced in order to be understood. In short, to use the language of Dr. Brown,* “it is the mind existing in a certain state of feeling.” *Fifthly*. Some of the faculties, those denominated reflecting, in place of having or being accompanied with sensations, create what are called *ideas*, and possess the attributes or undergo the modes of activity, to which the metaphysical names of perception, memory, judgment, conception, and imagination have been applied. Thus, according to this doc-

* Lectures on the Philosophy of the Human Mind. By the late T. Brown, M.D. Professor of Moral Philosophy in the University of Edinburgh. 1820.

trine, perception is not a separate faculty, but merely the mind existing in a certain state of activity of one of the faculties which form ideas. Memory is reckoned the second, and seems to depend on the excitement in a higher degree, often the voluntary excitement of one of the same faculties, but in itself no faculty. Hence the fact, quite inexplicable on the common metaphysical hypothesis, of the same individual possessing a good and bad memory, *i. e.* good in respect to the objects of one faculty, and bad in regard to those of another; and that, too, where there is equal anxiety and wish to have it good. The conception or imagination of metaphysicians is held to be a still higher degree of excitement of those faculties exciting ideas; an excitement which is sometimes so great, as to induce, or to be accompanied by, a belief of the actual presence of the objects imagined; and to this source, accordingly, phrenologists ascribe most of those illusions and supposed supernatural appearances, in which the popular histories of nations abound. What is styled judgment in metaphysical books is considered to be merely a mode of activity of the reflective powers, and probably also some of the moral sentiments, while engaged in the perceptions of some relations, as agreement and disagreement, cause and effect, transgression and punishment. Mr. Combe,

in speaking of association, observes, “ The metaphysicians conceive that our thoughts follow each other in an order of succession which is established, and have attempted to find out circumstances which determine the order and cause, in virtue of which one idea introduces another into the mind ; in short, by reflecting on their own consciousness, they have endeavoured to discover laws regulating the succession of ideas in mankind in general. Such an attempt appears to the phrenologist to be opposed by impossibility. If we place a number of persons on a hill top, say Arthur’s Seat, overlooking a champaign country, an arm of the sea, and a great city, one in whom *ideality* predominates, will be enchanted with the beauty and magnificence of nature ; one in whom *acquisitiveness* is the leading propensity, will think of the profits of the farms and ships, or of the works, whose elevated chimneys throw clouds of smoke into the air. One in whom *constructiveness* prevails, will criticise the line of the roads, and the architecture of the monuments. One in whom *benevolence* and *veneration* predominate, will think of the sources of enjoyment spread out before him, feeling gratitude and veneration to an all-bountiful Creator spontaneously arising in his soul. Now a metaphysician, who has also visited Arthur’s seat, expects, by reflecting on the

ideas which the recollection of it calls up in his own mind, to discover laws of association that will enable him to judge of the ideas that present themselves to the minds of all the other persons supposed, on its being mentioned in their presence. This expectation, however, is clearly vain; because the original impression received by an individual differ *toto cælo* from those experienced by all the others; and when the scene is recalled, the associated feelings and ideas must be clearly those which his peculiar mind formed at the first aspect of the scene. Association, therefore, expresses only the mental influence of the faculties. Thus, although the organ of causality is the only one which perceives the relation of necessary consequence, it may act in association or in concert with comparison, furnishing illustrations to render the argument clear; with ideality infusing magnificence and enthusiasm into the conception; with tune (melody) and imitation, modulation of the voice, and giving vivacity to the gestures; and the result will be splendid." "TASTE is the result of the harmonious action of the faculties, generally in at least a moderate degree of vigour. Thus, the most beautiful poetry is that by which gratification is afforded to the higher sentiments and intellectual powers, without the introduction of any extravagance, absurdity,

or incongruity to offend any of them. If ideality is in excess, this produces bombast; if causality predominates too much, it introduces unintelligible refinements; if wit (mirthfulness) is excessive, it runs into conceits, epigrams, and impertinences. A picture is in best taste when it delights the reflective faculties and moral sentiments, without offending any of them. Thus, if colouring be too strongly or too weakly executed, the picture will be deficient in its shades; if form (configuration) be weak, it may be out of drawing; if ideality and colouring predominate over reflection, it may be glowing and striking, but destitute of dignity and meaning. If language will be over powerful in an individual, his style will be redundant and verbose; if very deficient, it will be dry, stiff and meagre; if individuality be excessive, he may narrate without reflection; if reflection be too strong, he will reason without premises or facts.

Practical observations on the size of the organs.

Each of the faculties is conceived to have its own peculiar organic apparatus in each hemisphere of the brain; so that there are two organs for each faculty. These organs, which are possessed by all men to a greater

or less degree, are understood generally to extend from the base to the surface of the brain, and the distance in that direction is usually found to bear a relation to the superficial expansion of the organs; so that their respective sizes can be pretty distinctly ascertained and compared. This is a point of practice highly important, because the size of the cerebral parts is demonstratively one of the means by which their functions are to be determined. But size, though absolutely necessary to power, affords no evidence of activity; the degree of which, as depending on various causes, external and internal, must be discovered by other means. It is quite essential to distinguish between these two elements, size and activity; and probably, the greatest errors committed by many who pretend to a knowledge of this science, arise from their confounding them together, or rather their deducting inferences from the former without being acquainted with the latter, or making due allowance for the same. I shall therefore introduce to the reader's observation some practical observations on this subject.

First, as to the general size of the head.—Of the great diversities in this respect the reader is already acquainted, as well as of the remarkable differences in the forms of the heads; some being much larger in certain

directions than others, though possibly not more equal on the whole. The eye and the hand are often sufficient to detect those differences. We can have recourse to a pair of calipers when great precision is required. I shall insert the results of Mr. Combe's observations made on about twenty persons, including of course the integuments, &c.*

* For an account of the minute fractional parts, the reader is referred to Mr. Combe's System of Phrenology.

Table of Average Measurements by the Calipers.

| MALES between 45 and 50. | From the occipital spine to individu- ality. | From the occipital spine to the ear. | From the Ear to Individuality. | From the Ear to Firmness. | From Destructive- ness to Destruc- tiveness. | From Cautiousness to Cautiousness. | From Ideality to Ideality. |
|-----------------------------|--|---|-----------------------------------|------------------------------|--|---------------------------------------|-------------------------------|
| | <i>in.</i> | <i>in.</i> | <i>in.</i> | <i>in.</i> | <i>in.</i> | <i>in.</i> | <i>in.</i> |
| 1 | 7 | 4 | 5 | 6 | 6 | 5 | 5 |
| 2 | 6 | 3 | 4 | 6 | 6 | 6 | 5 |
| 3 | 8 | 5 | 5 | 6 | 6 | 6 | 5 |
| 4 | 7 | 5 | 5 | 6 | 6 | 5 | 5 |
| 5 | 8 | 5 | 5 | 6 | 6 | 6 | 5 |
| 6 | 8 | 4 | 5 | 5 | 6 | 6 | 5 |
| 7 | 7 | 4 | 5 | 6 | 6 | 6 | 5 |
| 8 | 7 | 4 | 5 | 6 | 6 | 5 | 5 |
| 9 | 7 | 5 | 5 | 6 | 6 | 6 | 6 |
| 10 | 8 | 4 | 5 | 6 | 6 | 5 | 5 |
| 11 | 7 | 4 | 5 | 6 | 5 | 5 | 4 |
| 12 | 7 | 4 | 5 | 5 | 6 | 6 | 5 |
| 13 | 7 | 4 | 5 | 6 | 6 | 6 | 4 |
| 14 | 7 | 4 | 5 | 6 | 6 | 6 | 5 |
| 15 | 7 | 4 | 5 | 6 | 6 | 6 | 5 |
| 16 | 8 | 4 | 5 | 6 | 6 | 5 | 6 |
| 17 | 8 | 4 | 5 | 6 | 6 | 6 | 6 |
| 18 | 7 | 4 | 5 | 6 | 6 | 5 | 5 |
| 19 | 8 | 4 | 5 | 6 | 6 | 6 | 5 |
| 20 | 7 | 4 | 5 | 6 | 6 | 5 | 5 |
| | 146 | 83 | 99 | 118 | 119 | 112 | 101 |

The average in these cases is considered to be higher than that of the native of Britain generally, several of the heads being larger than ordinary. This mode of measurement does not indicate the absolute dimensions of the phrenological organs. The length of them from the top of the spinal marrow, to the surface of the brain, is better taken by the crainometer; and for the breadth, we must still have recourse to the hand and eye, which when a good deal exercised, are well known to attain considerable accuracy; perhaps, indeed, all the accuracy that can be ordinarily described.

*Cautions to be observed in examining the
Cranium.*

In order to ascertain the developement of the cerebral organs, and their consequent mental manifestations, we *manipulate*, i. e. examine the head with our hands, and thus arrive at our object by the sense of feeling; in the bald head and forehead, where the hair is destitute, this operation is unnecessary, as we can perceive them by means of the organs of vision alone. By experience in feeling the living head, we may readily learn to distinguish the form of the bones, which lie beneath the integuments. In practising this method, however, it is necessary to guard against fall-

ing into error. We must consider the protuberances which constantly exist, and whose office, is quite foreign to the functions of the brain ; such as the mastoid processes behind the ears, the tuberos processes, the occiput, the zygomatic processes, and the frontal sinusses. In ascertaining the organ of language, we must observe whether the eyeball is prominent or hidden in the orbit, whether depressed or pushed sideward, inward or outward. According to this position of the eyeball, we may judge that each or such part of the brain, which is situated against such or each part of the roof of the orbit, is more or less developed. In feeling for the organs, Dr. Gall recommends the use, not of the fingers, but of the middle of the palm of the hand ; and declares, that habit, and a certain delicacy of touch, is necessary to qualify a person to make these observations with certainty of success. He also warns us to confine our observations to young and middle aged persons ; for at an advanced period of life, we occasionally find the brain retiring from the skull ; this leads to a recession of its inner table, and consequent inequality in its thickness, which creates a difficulty in judging exactly the size of the brain. Analogous changes sometime occur in the skulls of some lunatics, and occasion other difficulties to the phrenologist. It is also to be remembered, that we

wish to distinguish the size, and not alone the mere prominence of each organ. If one organ be much developed, and the neighbouring organ very little, that which is developed presents an elevation or protuberance; but if the adjacent organs be developed in proportion, no prominence can be perceived, and the surface is smooth.*

Rules for ascertaining the differences in the dimensions of the Organs in different Heads.

These are easily found in the following manner:—Draw a line, or suppose a line drawn, from the external opening of one of the ears across the middle upper part of the head and continued to the opposite ear. This line divides the head into two regions, the *frontal* or *anterior* region, and the *occipital* or *posterior* region. In some persons, one region will be found to possess a greater portion of brain than the other. Again, the directions in which the brain is most elevated, may be ascertained by lines drawn from the ear towards the central parts of the most elevated portions. The lines thus drawn may be considered as radii, and indicate similar

* Supplement to the Encyclopedia Britannica, vol. iii., article *Cranioscopy*, by Dr. Roget.

differences, that is, a larger portion of brain in one direction, in one individual, than in the same direction in another. Farther, some heads are flat at the top and broad at the sides, others seem to swell out or expand on the top, but are flat at the sides; a third sort of head is long from the forehead to the occiput, so that a plane, supposed to pass horizontally, would form an oval; while in another, we find the breadth across, a little above the ears, nearly equal to the dimensions from the anterior to the posterior part, so that the horizontal plane would thus form almost a circle. If again we suppose the head divided by an horizontal line passing from the middle of the frontal bone to the upper edge of the occipital bone, we shall find, that in some persons, the principal portion of the brain is below the line towards the base of the skull, or what is denominated by anatomists, the *basilar region*, while in others, it is above the line, or towards the top of the skull, and called the *occipital region*. In most heads the occipital and basilar regions are much larger than the frontal and sincipital regions. That such differences are daily to be observed is beyond all doubt; and they are important, as indications of corresponding differences of intellectual and moral power, and consequently character will no more be derived by those who are at pains to investi-

gate the relation between cerebral development and manifestation.

The general inference, regarding these considerations, may be simply but comprehensively expressed, viz., that the organs of the animal propensities being situated in the lower and back parts of the head, the intellectual faculties in the anterior, and the moral sentiments in the upper, the larger any of them are in proportion to the other parts, or to the whole head, the more they predominate in the character and influence of the conduct of the individual.

As regards the size of particular organs, there are many things to be attended to. Thus if one of them be largely developed and the neighbouring ones be small, the former will appear elevated and prominent, so as to be easily discovered; but if the latter be also considerably or equally developed, the general surface will be plain and smooth. Occasionally, an organ largely developed pushes neighbouring ones smaller somewhat out of place, in which the greatest prominence is usually in the centre of the larger organ, which therefore can be easily ascertained. Bony excrescences and excrescences about the sutures, &c., are to be carefully distinguished from the forms and sizes of the organs, as they have no possible connection whatever with the moral or intellectual

power. The common or usual forms of the organs, *i. e.*, the ordinary external indications of them, are learned by examining extreme cases, or by comparing them together, those of excess and defect. In well-harmonized heads no organ predominates, and hence there exists a general smoothness of surface, which is likely to perplex and tire, especially a man who has suffered himself to be abused by the common unscientific cant about bumps. Any one bust can only display the appearances of the organs as they exist in a single individual. Examination of many busts, and still more effectually, frequent inspection of heads, under the guidance of a person well practised in the art of manipulation, is essential to a correct knowledge of the varieties, relative sizes, and form of the organs, as presented in nature. It is advisable to commence with those that are large, and the heads of people in the middle period of life are to be preferred. Every science has its elements, every art has its difficulties. It is quite absurd to imagine phrenology an exception, or to hope to attain familiarity either with its principles or its practice, without being at pains to understand the former, or master of the latter. Phrenologists employ certain terms to express the gradations of size in the organs, as the following, which proceed in an increasing ratio, *viz.*—

| | | |
|----------------|---------------|----------------|
| 1 Rather small | 4 Moderate | 7 Rather large |
| 2 Small | 5 Rather full | 8 Large |
| 3 Very small | 6 Full | 9 Very large |

Captain Ross uses decimals with the same view, but they appear unnecessarily minute. Mr. Combe observes, that the end may be attained by the adoption of the following table, viz.:—

| | | |
|--------------|----------------|-----------------|
| 1 | 8 Rather small | 15 |
| 2 Idiocy | 9 | 16 Rather large |
| 3 | 10 Moderate | 17 |
| 4 Very small | 11 | 18 Large |
| 5 | 12 Rather full | 19 |
| 6 Small | 13 | 20 Very large |
| 7 | 14 Full | |

Mr. Crook employs the degits—

0, 1, 2, 8, 4, 5, 6, 7, 8, 9.

The figure 5, marks that the organ is the full average size (“rather full,” of Mr. Combe); the higher figures denote increase, and the lower decrease. The cypher signifies that the organ does not exist; but this mark is only required in the lower animals, for it is a general law, faculties similar in number and kind are possessed by every individual of a species.*

In Mr. Combe’s table, we have all the degrees from positive deficiency or negation, to

* Compendium of Phrenology, page 23.

the highest conceivable point ever observed, and at the same time are furnished with the means signifying those which may be reckoned intermediate between.

I have hitherto only mentioned size as one of the manifestations of mental power; it is not the only one. A healthy state of the brain and constitution, especially the former, on which, as is well known to medical men, the latter is greatly dependent, is of essential importance. Of the deviations from it in kind and degree, I need not speak, the subject being purely professional, though beyond a question quite amenable to, and forming a part of phrenological science. I have now to call the reader's attention to

The Activity of the Organs,

As another and highly interesting element in the manifestations of the moral intellectual powers. This varies in individuals no less than the general size of the head, or the relative dimensions of the organs; but its degrees are not to be appreciated by any obvious distinctions; neither are the causes of the known differences in different individuals, in the same individual at different times, or in the different organs and faculties at the same time, easily, if at all discoverable. Besides, the usual manifestation in the rapidity with

which the faculties are exercised, activity frequently displays itself in the expression of the countenance, or, to speak more comprehensively, in the fluency and celerity of the natural language. Activity sometimes compensates for limited size, and thus an individual possessing a small head, or certain organs very moderately developed, may occasionally be found, in some respects, to equal another possessing a large head, or with organs largely developed; but there can be no doubt, that when the activity is equal, superiority of size is accompanied with, or productive of superior power. In point of fact, however, it is questionable, if the degree of activity requisite to great size, is either permitted by, or exercised in, the ordinary condition of society. On the subject of size and activity, Mr. Combe has expressed himself at once so eloquently, judiciously, and briefly, that it would be injustice to the reader and to the science of phrenology, not to quote his words, in preference to any I might hazard myself: “The doctrine that size is a measure of power, is not to be held as implying that power is the only, or even the most valuable quality which a mind in all circumstances can possess. To drag artillery over a mountain, or a ponderous car through the streets of London, we would prefer an elephant, or a horse of great size and muscular power;

which, for graceful motion, agility and nimbleness, we would select an Arabian palfrey. In like manner, to lead men in gigantic, difficult, and fearful enterprises—to command by native greatness in perilous times, when law is trampled under foot—to call forth the energies of a people, and direct them against a tyrant at home, or an alliance of tyrants abroad—to stamp the impress of a single mind upon an age—to infuse strength into thought, and depth into feelings, which shall command the homage of enlightened men in every period—in short, to be a BRUCE, a BUONAPARTE, LUTHER, KNOX, DEMOSTHENES, SHAKESPEARE, or MILTON, a larger brain is indisputably necessary; but to display skill, enterprise, and fidelity, in the various professions of civil life, to cultivate with success the less arduous branches of philosophy—to excel in acuteness, taste, and fidelity of expression—to acquire extensive erudition and refined manners, a brain of a moderate size is perhaps more suitable than one that is large; for wherever the energy is intense, it is rare that delivery, refinement, and taste, are present in equal degree. Individuals promising moderate sized brains, easily find their proper sphere and enjoy its scope for all their energy. In ordinary circumstances they distinguish themselves; but sink when difficulties accumulate around them. Persons

with large brains, on the other hand, do not readily attain their appropriate place: common occurrences do not rouse or call them forth; and while unknown, they are not entrusted with great undertakings. Often, therefore, such men pine and die in obscurity. When, however, they attain their proper element, they feel conscious greatness, and glory in the expansion of their own powers. Their mental energies rise in proportion to be surmounted, and blaze forth in all the magnificence of genius, when feeble minds die in despair.

“Men, in general, willingly obey a person in authority, whose head is large and favourably proportioned; because, they feel natural greatness coinciding with adventitious power. If on the other hand the head is small, or large only in the organs of the propensities, the individual is felt to be inferior in spite of his artificial elevation, and is opposed, despised, and hated.”

The IMMORTAL EMPEROR NAPOLEON, CAPTAIN PARRY, and many others too numerous to mention, present a favourable specimen of the former; while, among men living in authority, numerous examples of the latter are to be daily met with.*

* Elements of Phrenology, 1824, page 185.

“Great general size, and consequent activity of the organs combined, constitute the natural elements of the highest genius.”



CHAPTER IX.

Physiognomy, or natural language.—Subordination and guidance of the powers.

THE primitive powers have each a peculiar manner of expressing themselves, or possess a natural language. This is the foundation of what is denominated physiognomy, as far as it is really scientific, and corresponds, according to the etymology of the term, with the constitution of nature. It has been defined “*The science of judging of the natural character and dispositions of men, from the features or lineaments of the face;*” but very properly, it may be extended to the lower animals, and comprehend all those outward and visible marks, by which the internal powers and feelings are determined.

There is no such connexion existing be-

tween the complexion, or the colour of the eyes, eyebrows, or hair, the magnitude or the form of any of the features or parts of the face, and the cerebral organs, as entitles us to infer any thing whatever concerning the talents and dispositions of men. The contrary opinion, which is maintained by Lavater and the earliest physiognomists, is founded either on mere conjecture, or on a degree of evidence insufficient to warrant a theory. But on the other hand, it cannot be doubted, that several, perhaps all, of the features are liable to be so far influenced by the animal, intellectual, and moral powers, as to assume, what is usually understood by the term expression; and that, accordingly, they may be regarded with some confidence, as indications either of what is passing within the mind, or of its settled, habitual, or predominant condition. The experience of most men may be appealed to in support of this truth, as indeed there are but few individuals, who do not act in the faith of it in their ordinary intercourse with their fellow creatures. To a certain extent, it has often been remarked, we are all physiognomists naturally, and almost without an effort to be so; and that, by diligent and long continued observation, our powers of discrimination and interpretation may be improved, will not allow of question.

But our admission to this effect is not comprehensive of any assumption regarding the connection of character with parts of the system, by no means physiologically necessary to its production ; whereas, it may be asserted, without hesitation, that the existence of a single instance of want of concomitance between the supposed outward sign, and the internal peculiarity, is quite destructive of the theory that maintains their relation. On this point, so far as by analogy they are concerned in it, the phrenologists are singular in their devotedness to truth. Shew them one example of the absence of a primitive power, the developement of the respective organ conceived to be allotted to which is obviously present,—or, again, prove the existence of a primitive power, in the absence of, or unaccompanied with, the alleged corresponding organ, no disease or malconformation coming in the way, and they consent at once to abandon their system. Farther, if the features of the face have no connexion, immediate and essential, it is meant, with the diversities of character, still less can they be allowed to furnish materials from which the actions and fortunes of mankind are to be determined, as some physiognomists have strenuously contended. I may quote a passage from an enthusiastic and ingenuous

author on this subject.”* The true physiognomist never foretels, what a person will, but what he should be. Future circumstances are out of his verge ; he only conjectures at the behaviour under them ; his discoveries reach no farther than what is inherent in him whom he examines, without offering at what is ascititious. He penetrates into the innate disposition, but not into the fortune of a man. He declares his genius, but not the province of his exertion ; knows the part for which the person is fit, but not that to which he is destined ; with this conclusion, qualified in its application to this science, the most strenuous supporter of phrenology will most cordially agree. The faculties are considered capable of producing actions which are good, and it is not admitted that any one of them is essentially, and in itself, or by necessity of operation, evil. But, if suffered to assume supremacy, or given way to beyond a certain degree of activity, all of them, with the sole exception of conscientiousness, may occasion a course of conduct, and any of them lead to results, which cannot be justified by the laws of morality and religion ; consequently, they are improper, injurious, and culpable. Abu-

* Philosophical Letters on Physiognomy, trans. London, 1751.

ses, then, are the consequences of excessive activity or uncontrouled influence, On the contrary, the possession of any faculty in a very low degree, or supposing this to be the case, the absence of any one, has only a negative effect, so as to speak—that is, permits the operation of other faculties without the restraint or the modifying influence, which, had there been no deficiency, would have been prevented.

It is held to be the obvious design of the Great Author of nature, that the merely animal propensities should be subordinate to the intellectual powers, and these again, together with them, regulated and governed by the moral sentiments.

The great aim of education ought to be the preservation and perfection of this relative arrangement ; and it is imagined, this is accomplished, not by the destruction of any of the primitive faculties, but by the proportioning the exercise and encouragement of them, to the peculiarities of the combination in which they exist, the circumstances of individuals, the laws of reason, and the principles of religion. Education, therefore, to be judicious, must be as various as the characters of those to whom it is to be applied. Of its efficacy as a modifying power, no sound phrenologist can entertain a doubt, though he may not be able to explain its operation.

The same may be said of the agency of religion, or even the system of Christianity itself, the whole tenor of the precepts of which must seem to him to be in accordance with, and what science discloses in regard to the constitution of man. In reality, as far as it is practical, it appears to him a system of education, founded on the most correct knowledge of the primitive faculties of man, to furnish the most suitable directions and impressive motives for their proper guidance, and, by these excellencies, together with the universality of its adoption, to give satisfactory proof, independently of other evidence, of its coming from him

“ In whom we live, move, and have our being.”

With such convictions, entertained as they must necessarily be, however painful or self-condemnatory, with a tenacity equal to that of consciousness, and, if possible, even less to be resisted, assuredly much more palpable than the inferences of demonstrative science, is it wonderful that the phrenologist should be tempted to consider the obstinate and truly malignant opposition which has been raised against this system, on the ground of its evil tendency, as virtually an imitation and a revival of that infuriate spirit which characterised the contemners of truth of former times? Its essence is the guide of heart, an

aversion to whatever pretensions as to knowledge, attainment and character, by which one man exalts himself above another,—an aversion to be levelled with the lowest of his species, as to the source and the merit of his moral and intellectual qualities, and to feel indebted exclusively to his Creator for all that distinguished his being,—an aversion to be amenable for his thoughts, words, and actions, to the Great Sovereign of the universe, who will suffer

“ No flesh to glory in his presence,”

and to be dependent, for time and eternity, on him alone, whose prerogative it is alike to judge the world in righteousness, “ and to have mercy on whom he will.” That there are difficulties, which may be conscientiously urged as reasons for a temporary suspension and belief in the doctrines of phrenology, no man who understands and supports it will deny. But an admission to the same effect must be made in the case of every other science of observation. To imagine, that such an admission is sufficient to justify universal scepticism, would be more extravagant in degree, merely to maintain that the occurrence of circumstances hitherto unexplained, or of anomalies hitherto unreconciled, is decisive against the claims of phrenology. But it were uncandid to conceal the

objections to which it has been subjected, as it would be uncharitable to think that they neither have been urged, nor can be entertained, without honesty of heart, or obtuseness of intellect. In regard to these, accordingly, its most intelligent and industrious supporters have generally exhibited a degree of candour, patience, explicitness, and considerate attention, in the most praiseworthy manner, and it is the more so, as it is of rare occurrence in the annals of philosophical controversy. The native effect of this spirit is rapidly realizing in a double sense, on the one hand, the avowed convictions of honourable minds consequent on deliberate investigation, that there is substantial truth in this science; and on the other, the substitution of personal abuse for sound argument, sheer blackguardism and indecency for wit, and an assumption of hardihood and bare effrontery, which very imperfectly veil the consciousness of defeat, and the still more agonising apprehension of being ere long outvoted, no less by the common sense, than the moral feelings of mankind.

The most cautious individual, who, without having previously made up his mind on this science, has candidly perused this elucidation of its principles, must be satisfied, that however clumsy or circuitous he may at first sight have thought their names, they bear a

strong resemblance to what he knows of human nature, and furnish an explanation of many of the phenomena which will bear comparison with any of the solutions to be found in metaphysical writings. He must admit, therefore, that the system cannot possibly be despicable; and in all likelihood, it will be his conviction, that there are presumptions in its favour which ought at once to secure it from ridicule, and obtain for it a rank and a title among the natural sciences. In strict philosophy, his admissions would require to be greater. He will not indeed be able—I may ask, who is able? to comprehend the nature subsisting between organic development and mental power, matter, in any way arranged, and thought or feeling, however diversified; but he must perceive that, while, on the other hand, the number of the primitive powers, *i. e.* those which cannot with any degree of propriety be decomposed in simpler elements, or referred to any more general principles, is so extensive as to comprehend the most important and commonly observed principles of human nature, it is, on the other, quite impossible either to doubt the evidence of the reality of the connexion between the manifestations of these powers and certain peculiarities in the cerebral mass, as indicated by the magnitude and form of the cranium, or to deny that the constancy, the invariable oc-

currence of such connexion, is a fair reason for inferring their relationship of instrument or organ and function to property.

Having arrived at this conclusion, it will seem imperative on him to prosecute farther inquiry into the system ; and particularly, to examine for himself, according to the most approved or usually adopted modes, the concomitances of development and character presented to him in life. In this case, after making allowance, as in any technical operations, especially at his outset, for inexperience and mistakes, he will infallibly gather thought to his convictions, and ere long attain a freedom of thought as to the proofs and application of the system, which will render him equally independent of authority and indifferent to opposition.

If the student possesses a metaphysical genius, and has formed a habit of reflection, he certainly will not stop here. He has reached, undoubtedly, the threshold of this science—he has acquired its elements—and even at this stage of his progress, the amount of his knowledge, but, still more, the nature of it, must give him a really enviable superiority over the most sagacious and acute observers. But even this is not the climax of its power, the termination of its utility. It is an instrument by which he can lay open all the mysteries of metaphysics: ascertain the correct-

ness of moral disquisitions ; detect, so far as they bear on the constitution of human beings, the fallaciousness or determine the fitness of political principles: analyse the poet and artist, with a precision totally unattainable by the common rules of criticism : and above all things, institute a system of education, appropriate to the individuals of character, encouraging to every excellence, and, therefore, conducive to all the perfection and the happiness of our common nature.*

Having concluded these prefatory but necessary observations, I shall in the following chapters, proceed to describe the powers of the various organs, which will be found on reflection, to be a perfect analysis of the human mind.

* Encycloped. Edinensis, vol. v. p. 593—5.

CHAPTER X.

Tables exhibiting the different arrangements of the Phrenological Organs, by Drs. Gall and Spurzheim, Mr. Combe, and Mr. Crook.

IT is much to be lamented that any differences should exist in the arrangement of the numbers of the phrenological organs; for we find that of Dr. Spurzheim recognized and followed by the lovers of this science in England, that of Mr. Combe in Scotland, and now Mr. Crook is endeavouring to establish a new arrangement. It must appear to all sensible persons, that this difference tends to create great confusion among phrenologists in their communications. The reason why Mr. Combe so obstinately refuses to acknowledge the improvement, is so contemptible as not to deserve mention. To such of my readers who may have adopted Mr. Combe's classification, I may be permitted to observe that Dr. Spurzheim's numeration can be acquired in less than an hour, with the greatest facility by means of the marked bust. I shall therefore insert tables of the three arrangements, commencing with that of Dr. Gall.

TABLE I.

DR. GALL'S CLASSIFICATION.

| ENGLISH. | FRENCH. | GERMAN. |
|------------------------|---|---|
| 1 Amativeness. | Instinct de la generation. | Zeugungstrieb. |
| 2 Philoprogenitiveness | Amour de la progéniture. | Jungenliebe, Kinderliebe. |
| 3 Adhesiveness | Attachment, Amitié. | Archangelichkeit. |
| 4 Combativeness | Instinct de la défense de soi-même et sa propriété. | Muth. Raufsinn, |
| 5 Destructiveness. | Instinct Carnassier. | Wurgsinn. |
| 6 Secretiveness | Ruse, finesse, savoir faire. | List, Schlaueit, Klugheit. |
| 7 Acquisitiveness. | Sentiment de la propriété. | Eigenthumsinn. |
| 8 Self-esteem. | Orgueil, fierté, hauteur. | Stolz, Hochmuth, Herschucht. |
| 9 Love of Approbation. | Vanité, ambition, amour de la gloire. | Eitelkeit, Ruhmsucht Ehrgeitz. |
| 10 Cautiousness | Circonspection, prévoyance. | Behutsamkeit, Vorsicht, Vorsichtigkeit. |
| 11 Individuality | Memoires des choses, memoires des faits, sens des choses, Educabilité, perfectibilité | Sachgedachtniss, Erziehungsfähigkeit. |

| ENGLISH. | FRENCH. | GERMAN. |
|----------------------------|--|--------------------------------|
| 12. Locality. | Sens de localités, sens des rap- ports de l'es- pace. | Ortsinn, Raum- sinn. |
| 13. Form. | Memoirs des personnes, sens des per- sonnes. | Personensinn. |
| 14. Verbal Me- mory. | Sens des mots, sens des noms, memoires des mots, memoire verbale. | Wortgedachtniss |
| 15. Colouring. | Sens de language de parole ta- lent de la phi- lologie. | Sprachfors- chungssinn. |
| 16. Colouring. | Sens des rapports des couleurs, talent de la peintures. | Farbensinn. |
| 17. Tune. | Sens des rapports des tons, ta- lent de la musique. | Tonsinn. |
| 18. Number. | Sens des rapports des nombres | Zahlensinn. |
| 19. Constructive- ness. | Sens de mechan- ique, sens de construction talent de l' architecture | Kunstsin, Bau- insn. |
| 20 Comparison. | Sagacite compa- rative. | Vergleichender, Scharfsinn. |

| ENGLISH. | FRENCH. | GERMAN. |
|----------------|--|---------------------------|
| 21 Causality. | Esprit metaphysique, profoundeur d'esprit. | Witz. |
| 22 Ideality. | Talent poetique. | Dichtergeist. |
| 23 Benevolence | Bonte, bienveillance, douceur, compassion. | Gutmuthigkeit, Mitleiden. |
| 24 Imitation. | Faculte d'imiter, mimique. | Darstellungssinn. |
| 25 Veneration. | Sentiment religieux. | Theosophie. |
| 26 Firmness. | Fermete, constance, perseverance. | Festigkeit. |

Dr. Gall, has marked on the bust as ascertained, many organs, since admitted by his illustrious co-adjutor, and other phrenologists.

Dr. Spurzheim first published his arrangement of number in Paris, in 1818, prior to any appearing in Edinburgh, the first of which was in 1819. Dr. Murray Paterson of Calcutta, Dr. John Stevenson of New York, Dr. Brown of Bengal, Mr. Swartz of Stockholm, and the English phrenologists, as already stated, have exhibited their good sense in its adoption. In 1823, this alteration took place in England; and if we are to believe the author of De Ville's Manual, no less than 5,500 of his busts and work have been sold, and

upwards of 7000 cards or papers,* with this arrangement. Now, *if* this statement be *true*, it completely overthrows the arguments of Mr. Combe relative to the inconvenience of the change of numbers, and proves the interest excited in the mind of the public, by the propagation of phrenological science. The Scotch phrenologists in their conversations adopt the numbers instead of the names of the organs; thus creating confusion in the minds of those on this side the Tweed, solely from the obstinacy of the sages of Modern Athens.

* I may be permitted to observe that, in 1822, I published, on a card, Mr. Combe's arrangement, and in 1823, a similar one with Dr. Spurzheim, and sold the whole I printed, about 500 of each.

TABLE II.

DR. SPURZHEIM'S ARRANGEMENT.*

ORDER I.—FEELINGS OR AFFECTIVE FACULTIES.

Genus 1.—Animal Propensities.

| | |
|------------------------|--------------------|
| 1 Amativeness | 6 Destructiveness |
| 2 Philoprogenitiveness | 7 Secretiveness |
| 3 Inhabitativeness | 8 Acquisitiveness |
| 4 Adhesiveness | 9 Constructiveness |
| 5 Combaticiveness | |

Genus 2.—Sentiments Common to Man and Animals.

| | |
|--------------------|------------------|
| 10 Self-esteem | 12 Cautiousness. |
| 11 Approbativeness | |

Genus 3.—Affective Faculties peculiar to Man only.

| | |
|----------------------|-------------------|
| 13 Benevolence | 18 Marvellousness |
| 14 Veneration | 19 Ideality |
| 15 Firmness | 20 Mirthfulness |
| 16 Conscientiousness | 21 Imitation. |
| 17 Hope | |

ORDER II.—UNDERSTANDING OR INTELLECTUAL FACULTIES.

Genus 1.—External Senses.

| | | |
|---------|--------|-------|
| Feeling | Taste | Smell |
| Hearing | Sight. | |

Genus 2.—Perceptive Faculties; the Intellectual Fa-

* System of Phrenology, 1825.

culties which perceive the existence of external objects, and physical qualities.

| | | |
|------------------|--|------------|
| 22 Individuality | | 25 Weight |
| 23 Configuration | | 26 Colour. |
| 24 Size | | |

Genus 3.—Intellectual faculties which perceive the relations of external objects.

| | | |
|----------------|--|-------------|
| 27 Locality | | 31 Time |
| 28 Calculation | | 32 Melody |
| 29 Order | | 33 Language |
| 30 Eventuality | | |

Genus 4.—Reflective Faculties.

| | | |
|--------------|--|----------------|
| 34 Causality | | 35 Comparison. |
|--------------|--|----------------|

TABLE III.

MR. COMBE'S ARRANGEMENT.*

ORDER I.—FEELINGS.

Genus 1.—Propensities.

Proper to Man and Animals.

| | | |
|------------------------|--|--------------------|
| 1 Amativeness | | 6 Destructiveness |
| 2 Philoprogenitiveness | | 7 Constructiveness |
| 3 Concentrativeness | | 8 Acquisitiveness |
| 4 Adhesiveness | | Appetite for food |
| 5 Combativeness | | 9 Secretiveness. |

* System of Phrenology, edit. 1825.

Genus 2.—Sentiments.

| | |
|------------------------|-----------------|
| 10 Self-esteem | 12 Cautiousness |
| 11 Love of approbation | 13 Benevolence |

Proper to Man alone.

| | |
|---------------|----------------------|
| 14 Veneration | Wonder |
| 15 Hope | 17 Conscientiousness |
| 16 Ideality | 18 Firmness. |

ORDER II.—INTELLECTUAL FACULTIES.

Genus 1.—External Senses.

| | | |
|------------------|-------|-------|
| Feeling or Touch | Taste | Smell |
| Hearing | Sight | |

Genus 2.—Intellectual Faculties perceive existence.

| | |
|------------------|--------------|
| 19 Individuality | 22 Weight |
| 20 Form | 23 Colouring |
| 21 Size | |

Genus 3.—Intellectual Faculties, which perceive the relation of external objects.

| | |
|-------------|-------------|
| 24 Language | 27 Number |
| 25 Order | 28 Tune |
| 26 Time | 29 Language |

Genus 4.—Reflective Faculties.

| | |
|---------------|--------------|
| 30 Comparison | 32 Wit |
| 31 Causality | 33 Imitation |

TABLE IV.

MR. CROOK'S CLASSIFICATION.

Mr. Crook, an able English phrenologist, has adopted a different arrangement of the organs, to the preceding; it is highly ingenious, though confessedly not so simple as those already mentioned; it will be a long time before it is generally adopted in consequence of the former being so very familiar to most of the followers of this science.

CLASS I.—INTELLECT, OR FACULTIES THAT PROCURE KNOWLEDGE.

Order 1.—Faculties that form impressions transmitted by the senses, from ideas and conceptions respecting the **EXISTENCE**—Qualities—Properties—and Relations of the objects of the external world.

| | |
|-----------------|--------------------|
| 1 Individuality | 7 Number |
| 2 Form | 8 Constructiveness |
| 3 Size | 9 Melody |
| 4 Weight | 10 Time |
| 5 Colour | 11 Locality |
| 6 Order | 12 Eventuality |

Order 2.—Faculties which reflect and decide upon the ideas furnished by the other powers. These faculties in conjunction, constitute the general power called **REASON**.

| | |
|-----------------|-------------|
| 13 Compassion } | 15 Wit |
| 14 Causality. | 16 Language |

CLASS II.—FEELINGS, OR FACULTIES WHICH FEEL
EMOTIONS.

Order 1.—Feelings essential to the preservation and gratification of the animal nature.

| | |
|-------------------------|-------------------------|
| 17 Amativeness | 23 Gustativeness |
| 18 Philoprogenitiveness | 24 Acquisitiveness |
| 19 Inhabitiveness | 25 Secretiveness |
| 20 Adhesiveness | 26 Cautiousness |
| 21 Combativeness | 27 Love of approbation. |
| 22 Destructiveness | 28 Self-esteem |

Order 2.—Feelings belonging to the human nature.

| | |
|-------------|-------------------|
| 29 Firmness | 33 Marvellousness |
| 30 Justice | 34 Imitation |
| 31 Hope | 35 Benevolence |
| 32 Ideality | 36 Veneration |

Mr. Crook's compendium of Phrenology, not containing a table, I have constructed the above, from his arrangement of the various faculties. He observes that the *first order* of each class contains the faculties common to man and the lower animals; the *second order*, those peculiar to human nature.

CHAPTER XI.

Descriptions of the organs of Amativeness, Philoprogenitiveness, Inhabitiveness, and Adhesiveness.—Their discovery.—Situation.—Functions, Effects, and Influences, Physiognomical Expression, Morbid Manifestations, Indications, and Consequences of low Activity.—Remarks.—Illustrations and Comparative Observations.

ORDER 1.—FEELINGS, OR AFFECTIVE FACULTIES.

Genus I.—Animal Propensities.

IN the preceding chapter, I have laid before the reader the different arrangements of the organs by different phrenologists; that which I shall adopt will be the one of Dr. Spurzheim, commencing with a description of those propensities common to man and animals, and which, not forming ideas, produce a propensity of a specific nature.

NO. I. AMATIVENESS.

PHYSICAL OR SENSUAL LOVE.

Discovery.—The manner in which Dr. Gall discovered this organ was as follows:—In his

capacity of physician he attended a widow lady of the most virtuous character, who was afflicted with affections of a nervous kind, and subsequently with a most violent attack of nymphomania. During the paroxysm, he supported her head, and was particularly struck with the immense size and heat of the superior part of the neck. In answer to some questions which he put to her, she informed him, that previous to a paroxysm, there was always great heat and tension of these parts. After noticing this, Dr. Gall commenced a series of observations, ascertaining the connexion between the cerebellum and the propensity, which very soon satisfied himself on this point.

Situation and external indication.—The cerebellum. Between the mastoid processes on each side and the tuberosity process in the occipital bone. The size is indicated by the thickness of the neck immediately below the posterior part of the head.

Direct natural function and uses.—This faculty gives origin to desire sexual gratification with the opposite sex, and is generally known by the term LOVE: it tends to give continuance of the species. It attains its full size between the ages of sixteen and twenty-six, when the superior part of the neck appears more expanded posteriorly. In old age it frequently diminishes in size, but

occasionally becomes largely developed previous to the age of puberty. Mr. Combe found this to take place in two boys, one of five and the other of twelve years, who manifested the feeling strongly.

Subsidiary effects and influences.—Excitement of some of the other powers, and frequently combined with *acquisitiveness* and *secretiveness*; a peculiar degree of interest in all things concerning the opposite sex.

Physiognomical expression.—Peculiar cast of the eyes; eyebrows a little drawn down and contracted; expansion of nostrils; mouth gently inclining to openness; general countenance intermediate between languishing and ardour; various attitudes or gestures practised in the dances of certain savages or semi-barbarians.

Abuse and morbid manifestations.—Indecency, immodesty, whether in actions or words; amounting, in some cases, to disgusting or outrageous violations of established manners.

Effects of deficiency or low activity.—Coldness, apathy, and indifference towards the other sex; celibacy arising from constitution, not principle or want of opportunity.

*Illustrations.**—This organ is found large

* In order to facilitate the views of the student, I shall mention a few casts where the organs are prominent, and which may be procured at the shops.

in the busts of Mrs. Mary Anne Clarke,* Dean, Mitchell, Macinnes, Thurtell, John Sparrow, and in the skull of Raphael; moderate in the bust of Pitt, and small in the skull of Dr. Hette.

Comparative observations.—If the reader wishes to make any observations on the cerebellum in the various orders of animals, by the shape and size of the neck, he should be acquainted with the ordinary forms of the cerebellum in mammiferous animals and birds in general. The cerebellum in birds is almost single, and resembles the vermiform process of the cerebella of quadrupeds, which present lateral parts in addition to the vermiform process.

The bull and ox furnish examples of the difference in the organs; in the former it will be found large, and in the latter small, in consequence of castration; the organ not being excited, becomes either stationary or diminished; the latter may be observed in old bulls after castration, when the cerebellum becomes less, and the bull takes much more the appearance of an ox than he presented before.

* I insert this on the authority of my venerable and worthy teacher, Mr. Brookes; who, accidentally visiting the collection of Mr. Gahagan, at that time a celebrated sculptor in London, observed this organ very large in the bust of that lady.

Incidental remarks.—This organ is found generally less in females than in males, and seldom developed before the age of puberty.

No. 2.—PHILOPROGENITIVENESS.*

LOVE OF OFFSPRING.

Discovery.—During the progress of Dr. Gall's observations, he noticed that the superior part of the occiput was larger in the female skull than in the male, and remarked, that the *crania* of monkeys at this particular spot were much like those of women; and it occurred to him, that as monkeys are remarkable for their affection to their young, and this being confirmed by naturalists, he determined to compare the *crania* of the males and females in his museum, when the same difference was remarked. This seemed a confirmation of the idea that the function for this part was an affection for offspring; and seemed plausible from the circumstance of the close vicinity of this organ to that of propagation. Minute and subsequent observations established the conclusion.†

Situation and Indication.—Directly above the middle of the cerebellum, and over the

* Mr. Crook calls this organ *Storge*.

† Gall, sur les Fonctions du Cerveau, edit. 1823, vol. iii.—Phrenological Journal, vol. ii. p. 23 —Combe's Phrenology, p. 67.

preceding. — When philoprogenitiveness is very large, and amateness small, the posterior part of the head appears to droop.

Functions and Use.—It excites those feelings comprehended under this name, or corresponds with the nature of parental love, which, when we consider our infantile helplessness, we should soon

‘Go to that bourne from whence no traveller returns,’ were we not nourished and supported by maternal affection. In speaking of this organ, the ancient riddle may not be unaptly quoted:—

“What is sweeter than honey?”

“A mother’s *love* to her *child*.”

And, as Dr. Spurzheim observes, nay, we see it daily exemplified, “that some women experience the greatest enjoyment in nursing their offspring.” This organ excites an instinctive fondness or sympathy for young, and in those persons who possess it large, we find them never happier than when surrounded by and enjoying the pleasures of children.

Effects and Influences.—Kindness of feeling (distinct from the organ of benevolence) towards weak and helpless objects.

This propensity, observes Mr. Combe, “inspires the spirit of *lullabies*, and the poet and dramatist in many of their representations.”

Physiognomical expression.—An air of tenderness, sympathy, delicate smiles, gentle not entire expansion of hands and openness of arms, soft smoothing tones of voice.

Excessive and morbid manifestations.—Inordinate solicitude and fondness, absurd partiality, pernicious indulgence of their caprices, and obstinate blindness to the faults of children.

Deficiency and low activity.—Carelessness towards, abandonment and exposure of children. Dr. Gall found this organ *deficient*, or but feebly developed, in 25 out of 29 infanticides; and observes, that a defect in the developement of this organ does not lead to child-murder; but that individuals deficient in this respect will soon yield to those unfavourable circumstances which lead to a commission of the crime, because they are not endowed with that profound feeling, which, in the heart of a good mother, rises victorious over every arch temptation.

Incidental remarks.—The phrenologist will be led to select a nurse, or child's maid, by the developement of this organ. A friend of mine informed me, that by this mode of choice he has never had cause to repent. It is almost always more predominant in females than in males.

Illustrations.—Found large in the skulls of the Caribs, Negroes, and Hindoos.

Comparative Observations.—With all animals we find it prominent in the female; this is the case in the cow, mare, bitch, hen, &c. particularly with the mare, who is very much attached to her colt, and this enlargement will often enable those acquainted with this science to distinguish a mare from a horse, even were there no other difference. However there are some tribes of animals remarkable for their attachment to each other and their progeny, yet it is more energetic in the females. The fox, unlike the dog, is attached to his partner for life, shares her cares, and if she is killed, rears the young. Birds, again, (sometimes) pigeons and doves for example, live in pairs, and are jointly solicitous in satisfying the wants of their young. Monkeys have this organ very large, and are noted for their love of offspring. There are, however, certain tribes of birds, in whom the organ is small; their eggs are resigned to chance, or the influence of some external agent. This also occurs in insects, fishes, and reptiles. The cuckoo is a striking example of the absence of parental solicitude. Its propensity to physical love is great, but it neither builds a nest nor hatches its eggs; these they deposit in the nest of small birds living on insects, who hatch and rear the young cuckoo with particular attachment.

In many animals it operates as an excitement to some other powers.

No. 3.—INHABITIVENESS.*

Situation.—Immediately above the central part of the preceding, but bearing no regular or definite proportion to it.

Discovery.—I am not aware by whom this organ was discovered; whether Dr. Gall or Dr. Spurzheim.

Functions and Use.—Dr. Gall supposed it to be connected in animals with the love of physical elevation, and in man with pride or self-esteem. Dr. Spurzheim found it large in those animals and persons who are attached to particular places. “I consider,” says he “in animals the cerebral part immediately above the organ of philoprogenitiveness as the organ of the instinct that prompts them to select upon a peculiar dwelling, and call it the organ of inhabitiveness. My attention has been, and is still, directed to such individuals of the human kind, as show a particular disposition in regard to their dwelling places. Some nations are extremely attached to their country, while others are readily induced to migrate. Some tribes wander about without fixed habitations, while others have a settled home. Mountaineers are commonly attached to their native soil, and those of them who

* Mr. Combe calls it Concentrativeness, and Mr. Crook Inhabitation.

visit capitals of foreign countries, seem chiefly led by the hope of gaining money enough to return home, and buy a little property, even though the land should be dearer there than elsewhere. I therefore invite the phrenologists, who have an opportunity of visiting various nations, the people of which are particularly fond of their country, to examine the developement of the organ marked No. III. and situated immediately above philoprogenitiveness. In all civilized nations some individuals have a great predilection for residing in the country. If professional pursuits oblige them to live in town, their endeavour is to collect a fortune as speedily as possible, that they may indulge their leading propensity. I have examined the heads of several individuals of this description, and found the parts in question much developed.”*

Some phrenologists have ascribed to this part concentration of the mind, and they call it *concentrativeness*, or the power which maintains two or more powers in activity, when directed to a certain object. This is the proposition. “*Can it be supported?*” says Dr. Spurzheim, “This is the question. *Is it true?* We must go to nature. I would first ask any one who would be inclined to speak of *concentrativeness* as a power, *Is it*

* Phrenology, p. 126.

a fundamental power? I am of opinion, that in order to be able to consider any power as fundamental, it must be such as can act of itself. All the powers which I shall mention as fundamental powers are such as can act singly. As regards concentration, you cannot conceive that a power can be operative without being able to act, except in combination with other powers; such is the case with concentration. Besides, if you examine the heads of men who are capable of great concentration of mind, you will find this part large in some, and small in others. *Concentration of the mind, then, may take place without this developement.*"* This being the case, it completely overthrows the theory of Mr. Combe and the Scotch phrenologists.

Effects and Influences.—Attachment to a particular situation, residence, &c.

Physiognomical expression.—Fixity of eyes or intentness of look, meditateness of aspect.

Excessive or morbid manifestations.—Extreme disinclination to quit places of residence.

Deficiency and low activity.—The contrary of the preceding.

Illustrations.—In the casts taken from the skulls of the wandering Esquimaux by Mr. Deville, and brought to this country by captain Parry, lieutenants Manico and Kendall,

* Lectures reported in the *Lancet*, vol. vii. p. 138.

this organ is very small, as well in the crania of some roving Tartars and South Sea islanders.*

Comparative Observations.—With regard to animals, we perceive some choose very high mountains, others choose the plains; some birds choose the trees, some the rocks, or the ground. The chamois and the wild goat love the mountains, and it is said they do so, because they find the food there, *but they come lower down to feed*. The starmigan, a bird found on the hills of Scotland, inhabits the highest and most barren parts of the mountain, *but comes lower down to feed*. There are other animals which live on the land, yet like to take their food in the water to eat it, and then come to the land again. The young of those birds which build their nests in the upper parts of trees, will, when let loose from a cage in which they have been confined and hatched, fly to the tops of the trees. Some birds prefer always the lower part of trees, as the nightingale and the blackbird; others prefer living on the tops of trees. The hen likes to live on the dry land, and the duck in the water; and we find a great difference in the organization of ducks and hens. In the chamois, which always lives on the most elevated ground he can reach, except when feed-

† Manual of Phrenology, p. 26.

ing, we find the upper part of the brain higher and much more developed than in the roe, which lives in the vallies; and in all animals fond of physical elevations, we find this developement. Even among rats, some are better pleased with the higher parts of the house; this is the case with the *old English*, or blue rat, whilst the Norwegian, or brown rat, is most fond of the lower parts of the house; however, ever since the Norwegian rats have been imported, they have nearly destroyed the ancient inhabitants; and we find a considerable difference in the organization of their heads ”*

Remarks.—This organ is also commonly larger in women than in men, and in the Negroes and Celtic tribes than in the Teutonic races; in the French, for example, it is larger than in the Germans.

No. 4.—ADHESIVENESS.

THE ATTACHMENT OF FRIENDSHIP.

Discovery.—Dr. GALL was requested to mould for his collection a lady's head who was described to him as a model of friendship. He did, more out of complaisance than from entertaining the hope of making any discovery. On examining her head, he found two

* Spurzheim's Lectures, vol. vii. p. 137.

prominences laterally to inhabitiveness. These he had never before observed; they were symmetrical, and evidently constituted by a portion of the brain; he consequently came to a conclusion that they indicated organs; and, on questioning the lady's friends, found her distinguished by the most inviolable attachment to her friends. Subsequent observations confirmed his conjectures, and finally established it as an organ.

Situation.—On each side of the preceding.

Functions, effects, and influences.—This faculty, observes Mr. Combe, gives the instinctive tendency to attachment, and causes us to experience the greatest delight in a return of affection. Those who possess it largely, feel an involuntary impulse to embrace, and cling to any object capable of experiencing fondness. It gives that ardour and firm grasp to the hand. It frequently displays itself in boys by an attachment to dogs, birds, rabbits, horses, or other animals. In girls, it adds fondness to the embraces bestowed upon the doll. The feelings which it inspires abound in the following lines by Moore:—

“ The heart, like a tendril accustom'd to cling,
Let it grow where it will, cannot flourish alone;
But will lean to the nearest and loveliest thing,
It can twine with itself, and make closely its own.”

and also inspires the verse,

“ For the heart that so truly loves, never forgets,
 But as truly loves on to the close;
 As the sun-flower turns to her god as he sets,
 The same look that she turned when he rose.”

The old Scotch ballad, “ There’s nae luck about the house,” observes the same author, breathes the very spirit of this faculty.*

Physiognomical expression.—Openness of look, frankliness and kindness of manner, heartiness and familiarity in salutations, warmth of embrace.

Abuses and morbid manifestations.—Unjustifiable, unfair preference; ruinous postponement of one’s own interests, and the sacrifice of principle to advantage or humour friends.

When small and of low activity.—Unsociableness; a recluse and monkish disposition quite consistent with want of benevolence.

Remarks.—Generally found larger in women than in men. With amateness it is the foundation of marriage, and society results from it. It particularly creates in women a constancy for the objects of their friendship, and Mr. Scott eloquently observes, “ Man boasts of his capacity for friendship, and falsely speaks of it as one of the purest of all human enjoyments. But it is only in the heart of feeling, confiding, generous woman, that friendship is to be found in the fullness of perfection. It was part of the doom pro-

* System of Phrenology, p. 86.

nounced upon her at the fall, that her desire should be to her husband, that he should rule over her; and conformably to the first part of this sentence, we find adhesiveness to be, in general, far more powerful in woman than in man. 'The most generous and friendly man is selfish in comparison with woman. There is no friend like a loving and affectionate wife. Man may love, but it is always with a reserve, with a view to his own gratification; but when a woman bestows her love, she does it with her heart and soul.'*

Illustration.—As an illustration of this organ, I cannot do better than relate the case of Mary Macinnes, executed at Edinburgh for murder; for we find it is existing sometimes in the most degraded criminals, where it manifests itself with a fervour and constancy worthy of a happier fate. This woman had obtained the affections of an individual, and her attachment to him continued ever strong in her last moments, and as will appear, assumed somewhat of a romantic nature, even in the last moments of her mortal career. He had sent her a pocket handkerchief having his name written in one corner, and also half an orange, with a desire that she would eat the latter upon the scaffold, in token of their mutual affection, he having eaten the corres-

* Phrenological Journal, vol. ii. p. 280.

ponding half on the preceding morning, at a corresponding hour. She held the corner of the napkin in her mouth almost all the night preceding her execution, and even on the scaffold. When seated on the drop, the turnkey gave her the half orange. She took it without fear out of his hand, and said, "Tell him (her lover) that I die perfectly satisfied that he has done all in his power for my life, and that I eat the orange as he desired me. May God bless him. Say to him, that it is my dying request that he may take care of drink and bad company, and be sure never to be out late at night." She seemed to forget eternity by the ardour of her attachment on earth. In the cast of her head this organ is very large.

Comparative Observations.— If we look among the various tribes of animals, we shall not want examples of this faculty. You will find some wish to live alone, others in flocks. The rabbits will live together, whilst the hares remain alone. The fox and magpie are the same, not living in society; while the elephants congregate, and live in large companies. The rooks live together in great numbers; many build their nests on the same tree, but they live together in pairs on different branches. Other animals do the same. The fox is attached to his mate for life, and also the pigeon, dove, magpie, and jay. It

is remarkably strong in dogs, who are notorious for their attachment to their masters; horses and oxen sometimes become sick and pine, when deprived of their accustomed companions. It is to be observed, that the instinct of living in society and of living in family are *modifications* of the faculty in question. Man belongs to the animals which are social and attached for life; society and marriage are consequently effects not of human reflection, but of an original degree of nature.*

CHAPTER XII.

Description of the Organs of Combativeness, Destructiveness, Secretiveness, Acquisitiveness, and Constructiveness, arranged as in the preceding chapter.

No. 5.—COMBATIVENESS.

DISPOSITION TO FIGHT.

Discovery.—Dr. Gall has given us a curious account of his discovery of this organ.

* Spurzheim's Physiog. System. p. 200. and Phrenology, p. 152.

He collected into his house a number of persons from the lowest classes of society, but following different occupations. He acquired their confidence, and disposing them to sincerity by presentations of two powerful agents, money and wine, drew them into conversation about each other's qualities, good and bad, and particularly the striking characteristics in each of their dispositions. In their portraits thus drawn, attention was paid to those who provoked quarrels, disputes, and combats; while those of a quiet disposition the former treated with contempt, and considered them as cowards. Dr. Gall then examined the heads of those *bravoes*, thus described, and found them possessing this organ much larger than the others.

In the head of an individual who in the fights of animals at Vienna, frequently encountered a boar or a bull, this organ was found very large. The doctor then examined the heads of many of his fellow-students, who had been banished from several universities for exciting quarrels and fighting duels, and met with the same results. Subsequent observations in man and animals confirmed his conjectures, and established the organ.

Situation.—At the posterior inferior angle of the parietal bone, or a little behind, and stretching higher up than the ear.

Functions.—Physical courage; the ten-

dency to resist; to attack; resolution to encounter danger and opposition; boldness of spirit.

Effects and Influences.—Intrepidity and undauntedness of argument; resentment and readiness to retaliate.

Physiognomical expression.—Keeness of eye; rigidity of features; compression and lateral elongation of lips; head a little elevated, and drawn backwards; hands, arms, and whole frame brought into activity, and a state of preparation for assault; and when large and active, it gives the voice a hard thumping sound, as if every word contained a blow. We are informed by Madame de Staël that the emperor Napoleon's voice assumed this kind of intonation when he was angry. Mr. Combe has observed similar manifestations in individuals, where this part of the brain was found largely developed.

Abuses or morbid excitement.—Unpeaceableness, restlessness, disputationness, contumacy, cavilling, litigiousness, scolding, love of fighting, doggedness of temper, fool-hardiness, unconceivableness, a downright desperado.

When small and inactive.—Timidity, want of spirit, cowardice.

Remarks.—Conspicuous in the ferocious animals, especially the male. It is requisite for heroism and magnanimity.

Illustrations.—Large in the heads of Murat, Ney, and Cobbett, in the skulls of Robert the Bruce, David Haggart, Mary Macinnes, Maxwell, the Carib Indians, and small in most of the Hindoos. It is also large in those persons, who have committed murder from the impulse of the moment, and not from pre-meditation.

Comparative Observations.—In animals, this propensity differs in its degrees, as well as in man. Some animals are never known to fight, while others are seeking every opportunity to engage, and appear fond of it. Rabbits are more bold and courageous than hares, and some dogs are more prone to fight than others, and are constantly watching an opportunity to attack, while others again invariably run away. In courageous animals it is very large behind and between the ears. In the horse, this will be found a sure criterion by which to judge whether he is shy and fearful, or bold, determined, and persevering. In dogs, the similar circumstance is to be observed, by examination. It is also noticed in game cocks; and *jockeys, cock and dog fighters* have heretofore been acquainted with the circumstances, from noticing the size of the parts; but it was phrenologists that laid down the principle.*

* Physiog. System, p. 302.

No. 6.—DESTRUCTIVENESS.

DISPOSITION TO DESTROY OR SEE DESTRUCTION OF LIFE.

Discovery.—When comparing with attention the skulls of several of the lower animals, Dr. Gall perceived a striking difference between those of the carnivorous and graminivorous tribes. In the latter, we find a large portion of brain posterior to the external opening of the ear; while in the former, it is the reverse. Having received the skull of a parricide, and subsequently that of a highwayman, who, in addition to his robberies, had committed several murders, he examined their crania frequently; and, although they differed in many points, yet they agreed in presenting a large and distinct prominence directly above the orifice of the external ear. He noticed other human and comparative crania, and found this part larger in carnivorous animals than in the latter; the former having a propensity to kill. An idea as to the nature suggested itself; but, said the doctor, “I revolted from this idea; but when my only business was to observe, and to stake the result of my observations, I acknowledged no other law than that of truth.” Let us not, therefore, fear to unfold the mysteries of nature; for it is only when we shall have discovered the hidden springs of human ac-

tions, that we shall know how to guide the conduct of men.

Situation.—Immediately above, somewhat around, but more towards the back of, the external opening of the ear; so as to give breadth to the lower and back part of the head.

Functions.—Simply the propensity to destroy without determining the object, or purposing cruelty.

Effects and Influences.—Keeness of spirit; pointedness of reproof; the alarming ability to endure distressing scenes.

Physiognomical expression.—Contracted, lowering brows; piercing eyes; mouth a little open, so as to shew the teeth; head projecting slightly forward, so as to be somewhat before the arms, one of which is somewhat elevated and retracted, as if accumulating strength for a blow; voice either very coarse and grating, or shrill and penetrating.

Abuses and morbid influences.—Anger, rage, malevolence, wrath, cruelty, wish to annihilate, blood-thirstiness, savage ferocity, murder, cannibalism, frantic rioting over the dead, insatiable hate.

When small and inactive.—Softness and want of energy; a tendency to indolence.

Illustrations.—This organ, under moderate manifestations, is important to the welfare of society, and we find it predominant in those

who delight in the destruction of, and to destroy, animals from their youth. It also gives origin to the bitterest species of sarcasm, satire and invective; excites the mind to conceive objects of terror, either horrible or sublime, according to the developement of ideality. We find this the case in Lord Byron's works. His appetite for fine excitement—the dark and dismal scenes of suffering and murder abounding in his stories, together with that dreadful venom and the fearful vehemence of his pen when turned towards his enemies, could proceed from no other source. It leads a poet in general to imagine scenes of devastation and destruction, and enjoy their description. Lord Byron's Poem of Darkness exhibits every image of the very configuration and pressure of destructiveness.

It is large in the busts of Dean, Mitchell, Mary Macinnes, Pallet, Thurtell, Heaman, and in the skulls of King Robert the Bruce, Gordon, Hussey, Nisbet, Bellingham, Buchanan, Rotherham, Albert; but small in most of the Hindoos.

Remarks.—Proofs of its existence are innumerable in man. But the exercise is by no means necessary to the commission of crime; on the contrary, when properly directed, it becomes a source of much benefit.

Comparative observations.—The skulls of

carnivorous and herbivorous animals on inspection, exhibit a very striking difference; this may be demonstrated by placing the skull of a carnivorous animal horizontally, and drawing a vertical line through the external ear, or meatus auditorius; when a great portion of the brain will be found situated behind that line, and the more the animal is carnivorous, the longer will be the portion of brain found in that region, as well as being full nearly over the ear. The lion, tiger, wolf, cat, pole-cat, fox, and weasel, &c. will readily show the contrast, when compared with the deer, sheep, rabbit, &c.

No. 7.—SECRETIVENESS.*

A DISPOSITION TO CONCEAL.

Discovery. At a very early period of Dr. Gall's studies, he was struck with the character and configuration of the head of one of his companions, who although amiable and

* This organ was formerly No. 9; in future I shall treat of it after destructiveness, as it belongs to the middle lobes of the brain; and, acquisitiveness, formerly 8 and 7, are portions of the cerebral mass which lies above the *fissura sylvii*. Anatomy indicates this rectification, and reasoning is not against it, because secretiveness is necessary to the propensities already examined, as well as to those which follow.—*Spurzheim's Phrenology*, p. 164.

possessing good abilities, was noted for his cunning and finesse. Although a true friend, yet his greatest pleasure was to try to deceive them. His head was very large at the temples, and naturally projected anteriorly. Dr. Gall at Vienna knew a physician of great abilities, who was generally despised on account of his notoriety as a cheat. By pretending to deal in objects of art, and lending on pledges, he robbed all who placed confidence. His performances were noticed by the government, who warned the public to beware of him by the public press, for he had practised his arts with such dexterity, that he could not be legally condemned. He often told Dr. Gall, that he knew no pleasure equal to that of deceiving, especially those who distrusted him most. As this man's head was very large at the temples, Dr. Gall was impressed with the idea that there is a primitive tendency towards cunning in the mind, and manifested by this particular cerebral organ. An immense number of observations have confirmed his conjecture.

Situation. In the anterior and towards the middle lobes of the brain, immediately above destructiveness.

Function. This faculty stimulates the art of secrecy or concealment of any object, the individual may have to perform.

Effects and influences.—In those persons

who possess this organ large, as also cautiousness, we find generally that their works are concealed until after their death. When in combination with amateness, the subject will seek after an individual of the opposite sex for a partner in life, that enjoys riches or property of some kind, and are not unaptly denominated *fortune hunters*, many persons who otherwise were excellent characters, have to my own knowledge, possessed these organs largely developed. When in union with the superior sentiments and large conscientiousness, it excites those secret stimuli of those feelings, which we find among friends reciprocally manifested, even should the ravages of time make their appearance, before outwardly declared.

It is a principal ingredient in prudence and dignity; circumspection without fear, a peculiar facility of discerning time, opportunity, or circumstance; it is also essential to the discrimination of characters, hence to *humour*, *personation*, and *physiognomical expression*. Archness of expression, indicated by obliqueness and leering of eyes; moderate dilation of the nostrils; irregular contraction and relaxation of the lips.

Abusive and Morbid Manifestations.—Mysteriousness, dissimulation, prevarication, cunning, slyness, duplicity, manœuvring, deceit.

Deficiency or low activity.—Too great openness; inexpedient frankness; bluntness of manner; hardness.

Comparative illustrations.—This organ is very frequently found in the higher orders of animals. It constitutes their slyness, we shall find it to constitute the cause of this slyness; and more particularly, if we consider the behaviour of man and animals, when they exercise functions of this kind; and this appears to be the especial faculty to cause the wish of clandestine conduct, either in words, thoughts, things or projects. For example, the fox is careful not to be observed; a dog secrets his bone; and cunning persons conceal their intentions, and even frequently profess opinions directly contrary to those they actually entertain.

No. 8.—ACQUISITIVENESS.*

OR THE PROPENSITY TO OBTAIN OR ACQUIRE.

Discovery.—When Dr. Gall was employed in comparing mental manifestations of cerebral developement, he was in the habit of collecting in his house numbers of the lower

* This organ was originally denominated covetiveness; but the Edinburgh Phrenologist (Sir G. S. Mackenzie) changed it to the more appropriate term of Acquisitiveness.

orders, with the view of more easily discovering the primitive propensities, which he supposed would be found to operate in them with greater simplicity and vigour, than in persons of a higher rank. He assembled a number of these individuals and divided them into three classes; the *first* included the *chi-peurs* or *chipiris*, who were proud of their thievish exploits; the *second*, those who detested the idea of stealing; and the *third*, or those who seemed to regard it with indifference. On comparing the heads of these three classes, he was surprised to find, that the most inveterate of the first class had a *long prominence* extending from the organ of secretiveness, almost as far as the external angle of the superciliary process, and that this region was *flat* in all those who shewed an horror at theft, while in the last class it was somewhat more or less developed, but never so much as in the professed thieves; and on repeating the experiment again and again with a new assemblage, he found the same results uniformly presenting themselves.

Situation. On the middle and lateral part of the brain, and immediately above the organ of destructiveness and posterior to that of secretiveness. On the temples, beneath the anterior inferior angle of the parietal bone.

Function.—It produces a tendency to acquire and possess in general, without reference

to the uses to which the objects, when attained, may be applied. It constantly asks for more, and prompts to its attainment.

Subsidiary effects and influences.—We find this organ directly from the other faculties, and hence is applied to the collection of coins, paintings, minerals, and subjects, forming museums, libraries, &c. &c., as well as money. It also is found large in those individuals who rob for the sake of stealing.

Physiognomical Expression.—A sort of longing dissatisfied air, indicated by expanded eyes, moderate contraction of the nose, and very small openings in the lips; head a little projecting; hands prefixed to lay hold.

Abuses and morbid manifestations. The abuses of this organ have different names, according to existing circumstances, as lunacy, plagiarism, theft, fraud, swindling, &c. &c.

Indications of deficiency or low activity.—Want of eagerness and enterprize in the pursuit of wealth; sluggish contentment; total unconcern about the goods of life, or property of others.

Comparative illustrations.—It is very easy to demonstrate, that the sentiment of the acquisition of property is natural and not factitious, as most animals possess it; birds have their own nests, quadrupeds their own burrows, and all defend their habitations from foreign aggression. Prime animals have also their stalls in their stable, and on entering,

every one takes its own. Nightingales, red-breasts, &c., have their districts, and drive away all others of their kind, even their young when they are grown up. The constancy of storks and swallows to those nesting places of which they have once taken possession, is well known. Bees and insects fight even till death in defence of their lives or nests against intruders. Every person is aware of the fact, that a dog will defend the house of his master better than he will that of a stranger. Sportsmen and gamekeepers observe, that some species of animals, a certain number only inhabit the same district, and do not permit others of their kind to approach, or take possession of their territories. Each herd of chamois drives away all others from the tract it occupies. This faculty is essentially necessary to man and animals, as their subsistence often depends on it. If acquisitiveness, which prompts to make provision for the future, as some carnivorous animals kill more than is necessary for their maintenance; in the same way, animals and man not only gather what is immediately necessary, but hoard up stores; sometimes take what belongs to others, and collect articles of which they can make no use of.

Remarks.—The great predominance of this organ in an individual, is probably better overcome by raising some of the other powers, than by a direct check.

No. 9.—THE ORGAN OF CONSTRUCTIVENESS,*

OR DISPOSITION TO BUILD OR CONSTRUCT.

Situations. At the sphenoidal portion of the temporal fossa, but more particularly at the anterior portion of the frontal bone, near to its union with the temporal process of the sphenoidal bone, by means of the facio-cranial suture.

Discovery.—Dr. Gall was the first who particularly noticed that those persons who displayed a peculiar disposition to mechanical arts, had a face of a somewhat parallel form, as large at the anterior part of the temples as at the cheeks; from thence he inferred, that the disposition to mechanical arts was indicated when the brain in this region was particularly prominent. Further observations on mechanics, architects, painters, and sculptors, in whom this organ is large, soon pointed out its precise situation.

Functions, and Uses.—It creates a desire, a propensity to construct generally, and constitutes only one part of the mechanical arts, giving manual dexterity; and being destined merely to execute mechanical conceptions,

* I beg to refer the reader to Dr. Spurzheim's and Mr. Combe's works on Phrenology, where interesting illustrations of this faculty are recorded.

whatever their nature, but which it does not point out.

Physiognomical expression.—Busiedness of manner; apt and facile management of the hands; looks somewhat expressive of intentness and curiosity.

Deficiency or low activity.—Want of dexterity as to workmanship, clumsiness, bungling.

Illustrations.—Large in the skull of Raphael; also in the skull of the milliner of Vienna, who was extremely dexterous in changing the forms of her manufactures.

Comparative illustrations.—It is large in all those animals who construct their habitations, as birds build their nests, rabbits their burrows, beavers their huts, but man alone is able to construct the hovel, and palaces of kings, or the temples of his God. It enables him to produce ships, war-engines, fortifications, manufacturing instruments, clothes, &c. It is not only essential in every department of the mechanics, but in all requiring manual dexterity, as in the arts of drawing, writing, carving, engraving, &c.

Abuses and morbid manifestations.—When this organ is too largely developed, it creates many unfortunate results; for example, an individual may ruin by building, or even endanger his life by coining false money, &c. Objectless planning, also unnecessary and unmeaning contrivances.

CHAPTER XIII.

Genus II.—Sentiments common to Man and Animals.

Description of the organs of Self Esteem, Approbativeness, and Cautiousness.

After mere propensities, follows what Dr. Spurzheim describes, the sentiments, which are a different species of faculties. To each of these is joined a propensity, an emotion, or feeling of a specific kind. There are several common to man and animals, others are on the contrary only proper to man. I shall first consider the former, which are entitled the inferior sentiments.*

No. 10.—SELF-ESTEEM OR PRIDE.

Discovery.—Dr. Gall's attention was first drawn to this sentiment, from having examined the head of a beggar; the middle and inferior part of which presented an elevation he had not observed before. He enquired into the cause of his poverty, and was surprised to hear him accuse his pride, as the

* Spurzheim's Phrenology, p. 173.

cause of his misery. He had conceived such high notions of his own importance as to believe himself much above learning a trade or profession. Thus being incapable of obtaining a livelihood by his honest industry, the only resource he had, was that of begging to save himself from starvation.

Situation.—About the occipital extremity of the parietal suture, at the middle of the superior and back part of the head.

Functions, effects, and influences.—This is one of the faculties, which are in general attributed to external circumstances; “but,” says Dr. Spurzheim, “its activity is so great, that I am astonished no one has heretofore thought of a special organ, on which its manifestations might depend.”* We often perceive the existence of pride, to a very great extent in individuals who have no pretensions to influence over others, either by birth, personal talents or fortune; whilst on the contrary, there are others enjoying these advantages who are very remarkable for the humility and modesty of carriage. Some ignorant and pitiful creatures oftentimes have the greatest idea of their own importance; and even children are to be found, who are fond of exhibiting their superiority over their compeers. It is a function found more or

* Phrenology, p. 173.

less throughout the whole animated creation ; for in every community we find leaders or followers ; and if we speak theologically, we find our divine preceptors ascribe the fall of mankind to pride ; no profession has ever been free from its influence ; even the teachers of humility often exhibit pride in all their actions. By the influence of this organ, individuals and whole nations think themselves superior to all the world besides ; they know every thing better than their neighbour, and their sanction seems to them, as of the utmost importance, and that it should have the full effect of a law.

Remarks.—Self-esteem is more common in men than in women ; boys frequently plan their judgement above that of others, while girls always seek for the approbation of those who surround them. It creates those comfortable conclusions respecting one's character, principle, or talents, which impart confidence to our exertions, to contribute to our success, the desire of power.

Physiognomical expression.—Heads elevated and rather retracted ; an erect altitude ; steadiness and a degree of sternness of air ; an expression approaching to harshness, if not disdain ; eyes a little compressed, and arched slightly upwards.

Abuses and morbid manifestations.—When this faculty becomes deranged, many luna-

tics fancy themselves emperors, kings, ministers, and even the Supreme Being; and on making examinations in lunatic asylums, the greater portion are men than women, whose senses have been alienated by pride.

Deficiency or low activity.—Want of confidence, and a depreciation of our abilities or condition: improper humility.

Comparative illustrations.—We find a sensation resembling this faculty, existing in certain animals, as in the turkey-cock, peacock, and horse.

No. 11.—APPROBATIVENESS.*

Discovery.—Dr. Gall discovered this organ in the person of a female who imagined herself queen of France, and was confined in a lunatic asylum.

Situation.—On the posterior part of the head, and on each side of the preceding organ, and over that of adhesiveness, when large it produces a remarkable fulness and breadth in the superior and back of the cranium; commencing about half an inch from the occipito-parietal suture.

Function and uses.—This faculty produ-

* Syn. Love of Approbation.—*Edin. Phren.*

ces a great desire to please, prompting the individual to a behaviour and actions, which are likely to procure him praise and fame. It makes us pay attention to the opinions other persons entertain of us. The object of its desire is to obtain approbation in general, without determining the means or the manner of acquiring it.

Effects and influences.—Creates much of the self-denial, and amenity of manners, that are observed in polished life; as also much of the excitement of the various faculties.

Physiognomical expression.—Gentle declination of the head, soft soliciting tone to the voice, gentle motion of the head to either side, smiling countenance, and produces that elegant line of beauty in lips which resembles APOLLO's bow, eyes softly opened, and easy expansion of the hands.

Abuses or manifestations.—Dr. Gall treats of the abuses of this sentiment by the names of vanity, ambition, and the love of glory, rather than the primitive faculty itself. To Dr. Spurzheim is due the merit of elucidating the ultimate principle of many of the faculties, and in particular this; the abuses of which, are restless apprehensions and anxiety as to the opinions of others; too great accommodatingness; vanity and conceit; excessive bashfulness.

Consequences of deficiency or low activity.

—Indifference, want of courtesy, uncomplianthness, impracticableness.

Remarks.—This feeling is very evident among children, and is encouraged in the schools under the name of *emulation* or *encouragement*, and there we make use of it for a most excellent purpose. If the organ is full in children, we may be sure they are fond of approbation; the feeling being called forth, is said to be a love of glory; but whether the love of approbation be considered in a general or a slave, it remains the same. The French are remarkable for a large development of this organ; and the English excel in self-esteem. The influence of this faculty exhibits itself in the manners, institutions, and daily literature of France, in an extraordinary degree. Praises and compliments are the current coin of conversation; and it has been observed in a public journal* that, *in France, glory is the condiment to the whole feast of life; and the trumpet of fame is that which makes the sweetest music to their ears.* In private life, also, an individual who has a great love of approbation in his own head is extremely prone to pay compliments to others, from an instinctive feeling of the pleasure of being praised. The organ is very large in the American Indians: and the love of de-

* Edinburgh Review, Nov. 1820. p. 409.

corations and ornaments, whether there are stars, garters, medals, tattooed faces, or bored noses and eagle-feathers, spring from it.

We find, from experience, this organ larger and more active in women, than in men, and I may observe, that a greater number of females than males become insane from this feeling. Dr. Spurzheim mentions, that he had met with only one man who had become deranged from this cause.

This faculty is imputed to the *desire of esteem* by Dr. Reid and Mr. Dugald Stewart, and to the *desire of glory* by Dr. Thomas Brown. Their observations on its functions are generally correct; but here as in the case of self-esteem, they only treat of its heroic manifestations, and present us with no views of its operations on the more interesting stage of private life.

Illustrations.—This organ is large in Dr. Hette, the Rev. Mr. King, Robert Bruce, Dr. Millar, Clara Fisher, Mary Macinnes, and the American Indians; deficient in D. Haggart and Dempsey.

Comparative illustrations.—This faculty is found largely in many of the lower animals. Some are evidently sensible to caresses and flattery, others on the contrary are deficient. The dog is extremely fond of approbation; and the hare displays the sentiment, not only in his sensibility to marks of affection, but in his spirit of emulation in the race. Dr. Gall

mentions, that in the south of France the peasants attach a "bouquet" to the mules who have acquitted themselves well, and that these creatures understand it as a mark of approbation, and feel afflicted when it is taken away. He also mentions, that he had a female monkey, who, on receiving a handkerchief, wore it as a robe, and took extraordinary delight in seeing it trail behind her as a train. In these animals it is generally largely developed. It was also larger in the Emperor Napoleon's celebrated charger "*Marengo*," who felt considerable pleasure when rode by his illustrious master, but exhibited great mortification when ridden by a groom, or inferior personage.

12.—CAUTIOUSNESS.

Discovery.—Dr. Gall was acquainted with a prelate at Vienna, a man of excellent sense and considerable intellect. Some persons had an aversion towards him, because, through fear of compromising himself, he infused into his discourses interminable reflections. In his conversations, he was difficult in coming to a conclusion, pausing continually in the middle of his sentences, and repeating the beginning of his words over several times. He never by accident gave way to the natu-

ral flow of his ideas ; but recurred to what he had already said, consulting himself, if he could not amend it in any point. His action was in bad conformity with his speech. He prepared with great care for the most insignificant undertakings. He subjected every connection to the most rigorous examination and calculation, before forming it. In this and another individual, Dr. Gall observed that portion of their heads, in the situation I shall presently describe, very large. And on prosecuting his enquiries further, the organ was established.

Situation.—About the middle of the parietal bone, in fact at their centres of ossification, and over the organ of secretiveness.

Functions and uses.—When this organ is fully developed, we generally find the individual, what is termed, a prudent character. It produces a cautious, circumspect, and considerate disposition of mind. Persons so organised, says Dr. Gall, are “ habitually on their guard : they know that it is more difficult to sustain than to acquire reputation, and consequently, every new undertaking is prosecuted with equal care as the first. They look forward to all possible dangers, and are anxious to anticipate every occurrence ; they ask advice of every one, and often, after having received much counsel, they remain undecided. They put great faith in the ob-

servation, that, in a hundred misfortunes which befall us, ninety-nine arise from our own fault. Such persons never break any article: they may pass their lives in pruning trees, or in working with sharp tools, without cutting themselves. If they see a vessel placed near the edge of the table, their nerves shrink. If they give credit, or indulge in gaming, they never lose large sums of money. Finally, they form a subject of criticism to their less considerate neighbours, who look on their predictions as extravagant, and their precautions as trifling and absurd.”*

Effects and influences.—Restrains the intensity of other powers; induces a prudential regard to consequences, deliberation, and balancing of circumstances.

Physiognomical expression.—An inquisitive piercing eye; head frequently, but only in a small degree, turned aside: the expression as if one listened: slowness and softness of gait: the hands either drawn towards the body, but open, or projected somewhat forwards, and as if groping one’s way.

Abuses or morbid manifestations.—Fear, dread, unfounded apprehensions and anxieties, irresolution, incapacitating doubts, uncertainty, wavering, despondency, timidity, fearful forebodings, consternation and panic.

* Sur les Fonctions du Cerveau, tome iv. p. 320.

Deficiency or low activity.—Inconsiderateness, rashness, hairbrainedness.

Remarks.—Frequently found much more conspicuous in children than in adults ; more observable in women than in men ; this remark also applies to the females of certain animals than to the males.

The metaphysicians do not treat of “ fear,” or of the instinctive tendency to avoid danger, as an original principle of the mind ; but Dr. Thomas Brown ranks *melancholy* among the primitive emotions, which is one of the effects of this faculty in a state of constant but not of violent activity.

Illustrations.—This organ is larger in the Germans, English, and Scotch, than in the French or Italians. It is large in Bruce, Raphael, Hette, the Mummies, and Hindoos ; moderate in Bellingham, Mary Macinnes, and Negroes. The difference between a large and small developement frequently exceeds an inch in extent ; and as the organ is particularly of observation, it deserves the attention of students in phrenology.

Comparative illustrations.—Certain animals are very timid and circumspect, as the deer tribe, &c., and place centinels to warn them of danger. This may be seen in the chamois ; also in the beaver, starlings, bustards and geese. In all those animals who seek their food by night, the upper and la-

teral part of the head posteriorly are more developed, than in those who go about during the day. Bats have the head large posteriorly.* As I have already stated, among the lower animals, it is generally larger in the females than in the males. Dr. Gall mentions some curious facts, illustrative of the greater manifestation of the faculty by the former than by the latter. He happened to kill as many as twenty squirrels, without finding among them a single female; although it was not in the season when they are confined by the care of their young. He caught during three years, forty-four cats in his garden, among whom were only five females. During one winter 500 bears were killed in the two provinces of Virginia, among which only two females were discovered. An account of the wolves destroyed in France, from the 1st of January 1816, to January the 1st 1817, was published officially by Count Geraldin, Captain of the Royal Chace; and it shewed 1894 males, and only 522 females. Among the goats, the leader is always a female, and their safety, it will be recollected, arises from a high degree of circumspection. Among wild cattle, horses, and other animals who are defended by their courage, the leader is uniformly a male; for in this sex, com-

• Spurzheim's Phrenology.

bativeness is in general much larger. This fact, of females in general being more cautious than males, is corroborated by Captain Franklin, in his journey to the arctic regions. "It is extraordinary," says he, "that although I made enquiries extensively among the Indians, I met with but one who said that he had killed a she bear, with young in the womb." It has been remarked in the way of criticism on these statements, that more males are produced by nature than females: which is quite correct; but this difference does not extend to the twentieth part of the difference in the numbers of their deaths by violence.*



CHAPTER XIV.

Genus III.—Affective faculties proper to Man only.

The organs of Benevolence, Veneration, Firmness, Conscientiousness, Hope, Marvellousness, Ideality, Mirthfulness, and Imitation, described.

In the preceding pages, I have considered

* Combe's Phrenology, p. 180.

man in the relation of an animal. I now come to consider him in a different character, for besides the faculties and their organs already spoken of, and which the reader will perceive are found also in different varieties of the brute creation, he is endowed with a number of *sentiments*, which constitute the human character, elevating him to a station far above the lower orders of animals, and verifying the divine proverb, “that he is at the head of the whole animal kingdom, with power and dominion over those inferior beings around him:” this being the case, we find them destitute of the faculties I now proceed to describe; and I need hardly say, that the parts constituting these organs, are entirely wanting in their brains.

The faculties now to be treated of, produce emotions or feelings, but do not constitute *ideas*.

13.—BENEVOLENCE.

Discovery.—One of Dr. Gall’s friends requested him to examine the head of his servant Joseph, for, said he, “it is impossible to find a greater degree of goodness than that young man possesses. For more than ten years, during which he has been in my service, I have seen him manifest, on all occasions, only benevolence and sweetness of dis-

position. This is the more surprising, as he does not possess the advantage of a good education, and has grown up to manhood among servants of very inferior habits." Dr. Gall adds, that previous to that time he had been far from supposing what seemed goodness of heart, could have any organ in the brain, and consequently, had never looked for indications in his head. The repeated solicitations, however, of his friend, at length awoke his curiosity.

Two other instances were presented to his view, in which similar circumstances were observed. "Thus," says Dr. Gall, "I had three cases in which goodness of disposition were strongly marked. I took casts of their heads, placed them along side each other, and continued to examine them until I discovered a developement common to the three. This, I at last found, although the heads were in other respects very differently formed. In the mean time I tried to find similar cases in families, schools, &c., that I might be in a condition to multiply and correct any observations. I extended my investigation to animals also, and in a short time, collected so great a number of facts, that there is no fundamental quality or faculty whose existence is better established than that of benevolence, and the organ with which it is connected.

Situation.—At the superior part of the

frontal bone, a little anterior to the situation of fontanel in infants.

Natural functions and its uses.—This faculty produces a desire to promote the happiness of others, excites us to compassion and active benevolence. We can with great facility distinguish kindness flowing from this sentiment—from acts of attention, arising from love of approbation, or more interested motives. A simplicity of manner, and directness of purpose, are communicated by this faculty, that touch the mind at once. We feel its character, and recognise it as genuine and unalloyed goodness, aiming at no end but the benefit of its object. On the other hand, we find an air of constraint and coldness attending acts of kindness, when they proceed from interested motives, that ultimately betray the source from whence they flow. The secret spring and ulterior object, are apparent, notwithstanding the efforts made to conceal them. ST. PAUL gives a beautiful description of the genuine character of this sentiment, in his account of Christian charity, commencing, “Charity suffereth long and is kind; charity envieth not; charity vaunteth not itself; is not puffed up.” The good Samaritan, mentioned in the Scriptures, is a delightful instance of the disposition formed by benevolence when eminently powerful.*

* Combe's Phrenology, p. 183.

Subsidiary effects and influences.—The principal portion of the active goodness exhibited in human life; mildness of temper; gentleness and cheerfulness. When arising from benevolence, it creates a great source of happiness to the possessor. It communicates a lively, amiable, delightful tinge to the impressions received by the mind from without. It produces liberality of sentiment towards all mankind, a disposition to put trust in them, and to dwell on their virtues rather than their vices. It creates beneficence, charity, kindness, compassion, sympathy, energy. A person in whom this feeling is powerful, seldom is heard to complain of the ingratitude or baseness of others. His goodness generally meets his own reward.

Physiognomical expression.—An expression exhibiting a truly pleasing tranquillity of the eyes and mouth. The head is a little in advance but somewhat depressed, and the voice gentle, soothing, and compassionate.

Abuses and morbid manifestations.—When undirected by caution and conscientiousness, it may lead us to bestow our kindness with profusion and prodigality; and when bestowed on the profligate and undeserving, too often tends to foster the misery, instead of removing it. Too great a facility, imprudent liberality, and a great liability to be imposed on by apparent distress.

Deficiency or low activity.—Shews an absence of feeling, unconcern as to the wants and miseries of others, complete hard-heartedness. Deficiency of benevolence does not produce actual cruelty, or any particular bad sentiment; it leads only, as just stated, to a complete carelessness as to the welfare of their fellow-creatures.

Illustrations.—When the organ is small, a powerful restraint is removed from the lower propensities. In Bellingham, Gordon, Griffiths, and other cold-blooded murderers, the organ is decidedly deficient. If large acquisitiveness and self-esteem be combined with this organ small, the person will be an utter unbeliever in disinterested goodness, regarding generosity, which has no selfish end, as imbecility. Such a combination, also, if joined with destructiveness, probably leads its possessors to doubt the benevolence of a Supreme Being. The character of Lucifer, as drawn by Milton, and by Lord Byron in his drama of Cain, is a true personification of great destructiveness and intellect, and the utter destitution of benevolence.

This organ is very large, and distinctly marked in the mask of Jacob Jervis, presented to the Phrenological Society by Dr. Abell.

That individual possessed the sentiment to so high a degree, that he was obliged to hide himself, when he saw persons coming to make

improper solicitations, being conscious of his inability to resist them. It is small in those tribes remarkable for cruelty, as in the Caribs. In the representations of Tiberius, Caligula, Caracalla, Catherine of Medici, Christian the cruel, Danton, and Robespierre, says Dr. Gall, the organ is very deficient : while it is large in Trajan, Marcus Aurelius, Henri Quatre, Raphael, Hette, and other individuals, distinguished for benevolent feeling; and moderate in Robert the Bruce and Gordon.

Comparative illustrations.—This organ* can very easily be proved by referring to animals, either in comparing different species, or different individuals of the same species. Some kinds of animals are naturally meek, as the deer, sheep, &c. while others are wild, savage, and mischievous; some horses, cows, dogs, &c. are meek and familiar; and others of the same kind are vicious, and kick, bite, &c.

We find on a reference to the different tribes of monkeys that this organ varies considerably, and their dispositions according.

Remarks.†—The Scotch metaphysicians in general admit the existence of this sentiment;

* Denominated “ Meekness in Animals.”

† If the reader will consult Gall’s, Spurzheim’s, and Combe’s works, he will find some pleasing anecdotes illustrative of this organ; my limits not permitting their introduction here.

but Hobbes, and many other metaphysical writers, who resolve all our actions into selfishness, deny. Dr. Thomas Brown successfully and beautifully answers the objection, that we are selfish even in our feelings of good will. "The analysis of love," says he, "as a complex feeling, presents us with always two elements; a vivid delight in the contemplation of the object, and a desire of good to that object. Though we cannot, then, when there is no interfering passion, think of the virtues of others *without pleasure*, and must therefore, in loving virtue, *love what is by its own nature* pleasing, the love of *the virtue* which cannot exist *without the pleasure*, is surely an affection very different from the love of mere pleasure existing, if it had been possible for it to exist *without the virtue*. A pleasure that accompanies the virtue only, as the soft and brilliant colouring of nature, flows from the great orb above; a gentle radiance that is delightful to our eyes, indeed, and to our heart; but which leads our eye upwards to the splendid source from whence it flows, and our heart still higher, to that Being by whom the sun was made.*

* Lecture 30.

No. 14.—VENERATION.

Discovery.—Dr. Gall gives the following account of the discovery of this organ. His father's family consisted of ten children, who all received the same education; but their talents and disposition were dissimilar. One of his brothers manifested a strong tendency, from his infancy, towards religion. "*Ses jouets étaient des vases de l'église qu'il sculptoit lui-même, des chasubles et des surplis qu'il faisait avec du papier.*" He was constantly engaged in prayer, and in saying mass, and when obliged to be absent from church, he spent his time in ornamenting and gilding a wooden crucifix. His father intended him for a merchant, but he himself disliked the operation, because, said he, it exposed him to the necessity of begging. * At 23 years of age, he abandoned merchandize, and having lost all hope of pursuing ecclesiastical studies, he fled from his father's house and became a hermit. His father, at this juncture, allowed him to study, and at the end of five years he took orders, and continued, till the period of his death, to live in the exercise of devotion and the practice of penance.*

* Combe's Phrenology, p. 194.

Dr. Gall then examined the heads of many persons who were truly devotees in religion, and subsequent observations confirmed him in the actual existence of this organ.

Situation.—The organ of veneration is situated in the middle of the coronal or upper part of the brain, a little before the crown, and is central between the organs of benevolence, hope, and firmness.

Functions and use.—This faculty produces the sentiments of respect and reverence, and when veneration is directed to the worship of the OMNIPOTENT and SUPREME BEING, it leads us to adoration. It also gives us an emotion of profound and reverential respect on perceiving an object at once great and good. It predisposes to religious feeling, without determining the manner to which it ought to be directed ; so that if the understanding be unenlightened, it may be gratified with the worship even of images or idols. It is the source of veneration or respect which we experience on viewing the ruins or buildings of ancient churches, palaces, temples, or the graves and memories of our forefathers, or the habitations and works of men illustrious for talent, genius, and virtue. In the antiquarian, this organ is generally pretty prominent.

Subsidiary effects and influences.—Regard for authority, especially that of parents ; also

for ancestry, rank, or whatever is of long establishment or high pretensions, independently of a conviction of their real worth.

Physiognomical expression.—The face either moderately elevated and advanced, or drooping forwards: the eyes in the former case, considerably opened, and directed upwards and inwards; in the latter, softly compressed: the hands expanded, and turned a little upwards as if to receive: a mild supplicating and subdued voice.

Abusive and morbid manifestations.—Undue prostration of intellect, superstition, too great regard for ancient customs, opinions and institutions, abject submission to authority.

Deficiency or low activity.—Want of reverence, disgraceful levity towards religion; absence of respect towards superiors; boorish familiarity.

Illustrations.—This organ is peculiarly large in the Negroes for

“ Lo! the poor Indian, whose untutored mind
“ Sees God in clouds, and hears him in the wind.”

and in Mary Macinnes, who was extremely prone to superstition, also in Kapitapole, Martin, and KING ROBERT the Bruce, who is mentioned in history, was strongly alive to religious feelings, and ordered his heart to be carried to the holy land, because he had not been

able to fulfil a vow to visit it in person. In RAPHAEL it is very large, for the subjects on which his inimitable pencil was employed, is well known to have been connected with the church. It is also noticed large in the portraits of CONSTANTINE, MARCUS AURELIUS, ST. AMBROSE, CHARLES I. of England, and MARLEBRANCHE. It is also greatly developed in the heads of poets and philosophers distinguished for their piety, as in Sir ISAAC NEWTON, MILTON, KLOPSTOCK, while this part of the head is flat in SPINOSA, who was a *professed atheist*. If we examine the heads of CHRIST painted by Raphael, this organ is exhibited finely developed. In the head of Dr. Hette it is small. When this organ is large, and that of self-esteem is small, humility is the result.

Remarks.—The metaphysicians, generally, do not admit veneration as an original emotion: they trace the belief in a GOD to the perceptions of the understanding. We perceive order, beauty, power, wisdom and harmony in the works of the Creator, and hence they infer, that from them a supreme creating and directing mind exists. In this view phrenologists agree; the understanding, however, only perceives facts and draws inferences, but does not feel emotions: and therefore, after this deduction was completed,

it would experience no tendency to adore the God whom it had discovered. Now, in point of fact, the tendency to worship is a stronger principle than the understanding itself; for the most ignorant and stupid are prone to venerate, while their intellects are incapable of directing them to an object worthy of their homage. Under the influence of a blind veneration, men cut branches from trees, then fall down and worship them; or they adore monsters and reptiles as deities—facts which were utterly inexplicable until the science of phrenology pointed out an instinctive tendency to venerate, altogether apart from the understanding. This tendency is produced by the faculty in question, and it is a great omission, that no such power is to be found in the systems of the old philosophers.

Dr. Gall treats of this sentiment as producing religious feeling alone; and to Dr. Spurzheim is due the merit of analysing and treating it as the source of the emotion of reverence and respect in general.

It is generally larger in the female head, than in the male.

No. 15.—FIRMNESS.

Definition.—It was noticed, by Dr. Gall,

that persons of a firm and constant character had this portion of the brain much developed, and Lavater had previously distinguished the same configuration, in concomitance with that kind of disposition,

Situation.—At the posterior part of the top of the head, anterior to the organ of self-esteem.

Direct functions and uses.—It is difficult to determine by a correct analysis, the ultimate principle of this faculty. Dr. Gall remarks, that, properly speaking, FIRMNESS is neither an inclination nor a faculty; “*C'est une manière d'être qui donne à l'homme une empreinte particulière que l'on appelle le caractère*; he who is deficient in it,” says he, “is the sport of external circumstances, and of communicated impressions. Dr. Spurzheim says its effects are mistaken for the will; because these in whom it is large are prone to use the phrase, “I will,” with strong emphasis, which is the natural language of determination; this feeling is very different from *per volition*. It gives constancy, perseverance, determination, passive fortitude of character, a feeling of independence, and unwillingness to be controuled.

Subsidiary effects and influences.—It imparts steadiness and constancy to the desires and decisions of the other faculties.

Physiognomical expression.—A fixed

energetic look, approaching to sternness, a deliberate and steady manner; voice emphatic and somewhat hard, but not usually above the natural pitch.

Abuses and morbid manifestations.—Stubbornness, obstinacy, self-will, infatuate resolution.

Deficiency and low activity.—Fickleness, too great a tendency to the impulse of his predominant feelings. If benevolence assume the sway, he is all kindness; when combativeness and destructiveness are excited, he will be passionate, outrageous and violent; and thus afford a spectacle of habitual weakness and inconsistency. If approbateness and benevolence be large, and firmness small, solicitations will, with great difficulty, be resisted.

Illustrations and remarks.—"A degree of it," says Mr. Combe, "is essential to the attainment of eminence in a difficult pursuit." Dr. Gall observes, that when it is large, the individual's motto will be,

"Tu ne cede malis, sed contra audacior ito."

The organ is larger in the British than in the French, and the latter are often astonished at the determined perseverance of the former, in the prosecution of their designs, whether they relate to the arts, sciences, or war. Napoleon knew well the French character in

this point, for in his conversations with count Las Cases, he not unfrequently complains of it. In war, the effects of this organ have been most strikingly conspicuous in the conduct of the nations. The French, under the influence of a large combativeness and moderate cautiousness, make the most lively and spirited attacks, and cheering as they advance to the charge; but if steadily resisted, their ardour abates, and, from a deficiency in firmness, they readily yield to adversity. On the contrary, the British advance with cool determination, arising from great firmness, with considerable cautiousness and secretiveness; and although repulsed, they are not discomfited, but preserve presence of mind to execute whatever may appear most advisable in the circumstances which have occurred.

This organ is large in the American Indians, and their powers of endurance are almost incredible to Europeans. With destructiveness, it was also very predominant in John Thurtell, King Robert the Bruce, and David Haggart: small in Mrs. H. and Gibson.

Whether the metaphysicians admit any faculty analogous to this sentiment, I am not aware. It exercises a great influence in forming the character, and its omission is very important in any system of mental philosophy.

No. 16.—CONSCIENTIOUSNESS.*

Situation.—On the posterior and lateral parts of the coronal surface of the brain, superior from cautiousness and posterior from hope, on the side of firmness, and over approbateness. Dr. Gall marked its functions as unascertained; but their discovery and the establishment is due to Dr. Spurzheim.

Functions and uses.—Since the days of Hobbes, in the middle of the sixteenth century down to the present period, metaphysical philosophers have been disputing about the existing of a *moral faculty in the human mind*. The limits of this work not permitting me to enter into a description of their sentiments on this question, I shall refer to Mr. Combe's work,† where they are ably discussed.

This faculty produces a knowledge of the feeling of obligation, incumbency, right and wrong, for which, unfortunately, we have no single definition in the English language; just as ideality produces the sentiment of beauty. Justice is the result of this sentiment, acting in combination with the intellectual powers. The latter investigates the

* Mr Crook calls this organ JUSTICE. Some Phrenologists have gone so far, as to add another organ anterior to that marked 16 on the busts and frontispiece, which they denominate as that of JUSTICE.

† System of Phrenology, 8vo. 1825, p. 288.

motives and consequences of actions, but after having done so, they of themselves experience no emotions. In making a survey of human conduct, as soon as the intellectual powers have minutely penetrated into the springs from which it proceeds, a feeling of decided approval or condemnation, distinct from all other sentiments, and pure intellect arises in the mind; this feeling is produced by the faculty of conscientiousness.

Subsidiary effects and influences.—It forms the basis of human laws; the dictates of justice and equity, approval, and condemnation, all distinct from, though readily combinable with the decisions of the intellectual powers.

When large and powerful, the individual is disposed to regulate his conduct by the nicest sentiment of justice; there is an earnestness, integrity, and directness in his manner, which inspires us with confidence, and give us a conviction of his sincerity. An individual like this, desires only to act towards his neighbour from the love of justice, unbiassed by fear, interest, or any sinister motive.

Physiognomical expression.—Sedateness of aspect, approaching to solemnity, with peculiar quietness of manner, impressive tone of voice, a pleasing simplicity of manners, commanding esteem and winning the affections of all well constituted minds; hands open, and disposed to rise and fall slowly.

Morbid manifestations.—Extreme scrupulousness, censoriousness, severity of judgment, fastidiousness, a sense of remorse amounting to self-hatred: agonizing apprehensions of the justice of a Supreme Being.

Deficiency and low activity.—Small power to resist the solicitations of the other faculties, torpidity as to just claims, dishonourable opinions as to the principles and conduct of other men.

Illustrations.—Large in Rotheram, executed for murdering a servant girl, from the pure impulse of an excessive influence of destructiveness, for he did not violate her person, and only took her umbrella and shoes; yet, when apprehended, he directly confessed his crime—insisted on pleading guilty—and it was with great difficulty the judge could persuade him to retract his plea. It was also large in Dr. Hette and Mrs. H. *Defective* in James Gordon, who murdered the pedlar boy in Eskdale muir, strongly denied his guilt, and after his trial, abused the judge and jury for his conviction. Previous to his execution he admitted the justice of his sentence: also in the casts of the boy Gibson, and Mary Street, who were noted for their lying and deceitful habits. *Small* in King Robert Bruce, Haggart, Bellingham, and in most of the skulls of the savage tribes.

Remarks.—The disputes about the exist-

ence of this faculty imply the possession of it in a limited degree. Those having it largely developed, can no more doubt of its reality, than any other primitive power.

No.—17. HOPE.

Situation.—On each side of the organ of veneration, adjoining the anterior portion of the organ of conscientiousness, and extends under part of the frontal and parietal bones.

Definition.—Dr. Gall considers HOPE as belonging to every faculty; but Dr. Spurzheim very properly observes, that although every faculty being active produces *desire*, as acquisitiveness the desire for property, and love of approbation the desire for praise; yet, this is very different from hope, which is a simple emotion, *sui generis*, and is susceptible of being directed in a variety of ways, but not desiring any one class of things as its peculiar objects. Nay, desire is sometimes strong, when hope is feeble and extinct: a criminal on the scaffold may ardently desire to live, when he has not the least hope of escaping death. Dr. Spurzheim was convinced, by analysis, that hope is a distinct primitive sentiment, and was led to expect that an organ for it would

exist. Numerous observations have since determined the situation of the organ, and it is now admitted by phrenologists as established. However, Dr. Gall in his last works, has marked the functions of this portion of the brain, as unascertained.

Functions and use.—This faculty favours the organ of veneration, and consequently the exercise of religion, and produces the natural tendency to look forward to futurity with expectation, disposing to belief in a life to come.

The immortal POPE beautifully describes the influence of the sentiment last treated of, in prompting us to worship, blindly indeed, when undirected by information superior to its own. He falls also into the idea now started in regard to hope, and represents it as the source of that expectation of a future state of existence, which seems to be the joy and delight of human nature, in whatever stage of improvement it has been found.

“ Lo! the poor Indian, whose untutored mind,
Sees GOD in clouds, and hears him in the wind;
His soul proud science never taught to stray,
Far as the solar walk or milky way :
Yet simple nature to his HOPE has given,
Behind the cloud-top’d hills, an humble heaven :
Some safer world, in depths of woods embraced,
Some happier island in the watery waste,
Where slaves once more their native land behold!
No fiends torment, no Christians thirst for gold.”

This faculty produces the sentiment of hope in general. It excites a strong tendency to believe the possibility of attaining what is agreeable to any of the other faculties, more especially when in combination with perseverance or firmness.

“ ——— Hope, with sanguine eye, is seen
Roving through Fancy's gay futurity.
Her heart light dancing to the sound of pleasure.”
H. K. WHITE.

Subsidiary effects and influences — Are those feelings which enter into the composition of faith, distinct from the exercise of the judgment, whether that faith respects the tenets of religion, or the ordinary concerns of life.

Physiognomical expression.—Sprightliness and vivacity; eyes rather large; the lips compressed into a faint smile.

Abuses and morbid manifestations.—Too great facility of belief; credulity, rashness of anticipation as to good, over sanguine expectations.

Deficiency or low activity.—Distrust, despondency, disposition to forebode evil.

Illustrations.—Large in the cast of the skull of Raphael, and small in that of Dr. Hette.

Remarks.—This sentiment is distinct from

desire, which is an attribute of several faculties.

No. 18.—MARVELLOUSNESS,

OR WONDER.

Situation.—Immediately above the organ of Ideality.

Natural functions and uses.—It excites a belief, and exhibits emotions in those tales of fiction which have the appearance of truth, more especially those of a marvellous kind, as ghosts, angels, transformations, and supernatural events; particularly those related in the Arabian Nights Entertainments, Waverley Novels, Castle of Otranto, &c. &c. And Mr. Combe observes, that in persons fond of reading or listening to these stories, he has uniformly found the brain at this part very largely developed. I have generally found it particularly large in those females, who prefer the perusal of romances, to that of a pure sentimental novel, as also their preference to view the extravagant representations of a Der Freischutz or Valmondi, to that of the Hypocrite, or any of those delightful comedies, which generally are calculated to impress on the mind a beautiful moral feeling.

Subsidiary effects and influences.—These are in all probability, in part at least, the love of irregularity, being uncommon, romantic, the disposition for novelty, and admiration in part.

Physiognomical expression.—The head is a little retracted; open eyes and mouth, hands expanded upwards.

Abuses and morbid manifestations.—A love or feeling for marvellous and supernatural events, to a very painful degree; tendency to perceive spectral illusions; subjugation to improbable fictions, imaginary inspirations out of the world.

Deficiency or low activity.—Quiescent soberness of mind as to extraordinary and newly occurring matters; aversion to what appears out of the order of nature.

Illustrations.—Large in the busts, masks, and skulls of Socrates, Joan of Arc, Tasso, Swedenborg, Halleran, Oliver Cromwell, Dr. Price, young Stilling, Wesley, Dr. Johnson, Shakespeare, Sir Walter Scott; also those highlanders, and natives of Ireland who believe in second sight.

Remarks.—Those who write on prophetic subjects have generally this organ very large, and, as far as my own experience goes, it predominates in the female, more than the male.*

* The reader will do well to consult as illustrations of this faculty, Dr. Gall's—"Sur des fonctions du cer-

The metaphysicians, Dr. Adam Smith,[†] considered wonder as a *sentiment*, and Dr. Thomas Brown,[‡] as a *primitive emotion*.

No. 19.—IDEALITY. ||

Discovery.—The first *poet* whose head arrested Dr. Gall's attention on account of its form, was one of his friends who often composed *extempore verse*, when least expected, and for doing so had acquired a sort of reputation. In him this organ was very prominent. He noticed the same form in the bust of Ovid. He supposed this to be the organ of poetry, but it being a subject of doubt, and although he considered that a talent for poetry might be a primitive faculty, he prudently waited for further observation.

Shortly after, he obtained the head of ALXINGER, the poet, in which this part of the brain, with the organ of adhesiveness,

veau, &c." t. v. p. 346. Combe's Phrenology, p. 229, and the Phrenological Journal.

[†] History of Astronomy, page 2.

[‡] Lectures—Vol. iii. p. 59.

|| Dr. Gall called it the organ of Poetry, and it was changed by Dr. Spurzheim to that of Ideality.

were much developed. In the poet JUNGER, the same prominences were observed—BLUMANER had them with the organ of wit much larger—WILHELMINE MAISH, who acquired great reputation for his poetry, at Vienna, had a similar enlargement in his head, above the temples. Dr. Gall observed the same organization in Madame LAROCHE, at Offenbach, near Francfort, in ANGELIQUE KAUFMANN, in SOPHIA CLEMENTINA, of Mecklen, in KLOPSTOCK and SCHILLER, also in GERNER, of Zurich. In Berlin, he contrived to consider it with great reserve, when M. NICOLAI invited him and Dr. Spurzheim to see a collection of about 30 busts of poets in his profession, in all of which, more or less, this organ was prominently developed. From that moment he considered, that the talent for poetry was a primitive faculty, and that it is connected with this part of the brain as a special organ.

Situation.—A little above the temples, or nearly along the temporal line of the frontal bones.

Natural functions and uses.—It is to Dr. Spurzheim that we are indebted for a correct analysis of this faculty; he observes, that “it is impossible that poetry should be confined to one single organ; and I therefore think that the name ‘Organ of Poetry’ (used by Dr. Gall) does not indicate the essential

faculty.”—In every kind of poetry the sentiments are exalted; the expressions warm; there must be rapture, inspiration, what is commonly termed imagination or fancy.

This faculty produces what the French term “*Le Beau ideal*,” that feeling of exquisiteness or perfectibility. It gives inspiration to the poet, excites the feeling of the sublime and beautiful, a tendency to embellish, and to be delighted with whatever is pleasing.

Subsidiary effects and influences.—It excites the warmth and energy required for the conceptions of the poet and artist; as a proof of this, the sublime scenes executed by RAPHAEL, HAYDON, and MARTIN, exhibit the existence of this organ; without it the world would have never beheld the Cartoons, the Deluge, or Belshazzar’s Feast; it is the power of this faculty that elevates the feelings above vulgar life, creates a refinement and splendour as to externals; hence to a full development of this organ, arise many of the improvements in society.

Physiognomical expression.—Energy and quickness of look; the eyes glancing, and subject to a rolling motion; head somewhat steady.

Abusive or morbid manifestations.—Exaggeration to a ludicrous or criminal degree; enthusiasm beyond reason and propriety; uncontrollable raptures; longing for

the exquisite, the unattainably perfect, and the admirable, whether it exists in nature or fiction.

Deficiency or low activity.—Plainness and simplicity of taste; literalness; inability to get beyond matter of fact; coldness of conception; the want of poetic feeling.

Illustrations.—"If," says Dr. Gall, "we pass in review of the poets of all ages, we shall find this configuration of the head common to them all;" and Dr. Bailey, in a letter dated Rome, 30th May, 1822, addressed to Dr. Bray, says,—“You may tell Dr. Gall that I have a mask of Tasso, taken from nature, and that, although part of the organ of poetry be cut off, nevertheless the lateral breadth of the crime in this direction is enormous.”

This organ is large in Raphael, Voltaire, Wordsworth, Wilkie, Ed. Burke, Haydon, Henri Quatre, Francois Cordonnier; small in the New Hollanders, Mr. Joseph Hume, M. P., Bellingham, Haggart, Gordon, &c.

I shall cite two specimens of poetical language the result of this faculty, the first by Shakespeare, viz. Prospero's concluding speech in the Tempest:—

“ I have bedimmed
The noontide sun, called forth the mutinary winds,
And 'twixt the green sea and the azur'd vault
Set roaring war; to the dread rattling thunder

Have I given fire, and rifled Jove's stout oak
 With his own bolt; the strong bar'd promontory
 Have I made shake, and by the spurs pluck't up.
 The pine and cedar groves at my command
 Have waked their sleepers; opened and let them forth
 By my most potent art. But this rough magic
 Thee abjure; and when I have required
 Some heavenly music, which even now I do,
 To work mine end upon their senses, that
 This airy charm is for; I'll break my staff;
 Bury it certain fathoms in the earth;
 And, deeper than did ever plummet sound
 I'll drown my book."

The second is by my friend Dr. John Wilson, of Walworth, in whom this organ is predominant; and whose talents for composing and reading poetry and poetical language, is well known to those who have the honour of his acquaintance.

"On Thursday, whilst the bright luminary of heaven shone forth in meridian splendour, reviving the face of nature, and causing her beauties to shine forth more gloriously: *She*, whose smile is beauteous with spring, and whose frown is dark as the regions of perpetual night, left the verdant realm of her own habitation, for the hum of the crowded city. When by the omnipotent command of Jove, the thunders rolled awfully and majestically loud, the vivid lightning darted from pole to pole, and the descending waters deluged the smiling earth, so that the nymph returned again to her own *grotto*, leaving unaccomplished many of her intended vows, and also her intended visit to the priest and priestess.—*De Templum Ossorum.*"

J. W.

Remarks.—This delightful faculty is pe-

culiar to man, and naturally points him out as the denizen of a higher and better state of being.

Combined with the idea of beauty, this faculty has long been entertained by the metaphysicians.

No. 20.—MIRTHFULNESS.

GAYNESS, OR WIT.

Situation.—On the anterior superior portion of the forehead, near the organs of benevolence, and on the outer side of causality.

Definition.—"We all know," says Mr. Combe, "what is meant by wit, and yet there is no word that presents more difficulties." Dr. Gall observes, "that to convey a just idea of the faculty, he could discover no better method than to describe it as the predominant intellectual feature in Rabelais, Cervantes, Boileau, Racine, Swift, Sterne, and Voltaire. In all these authors, and in many other persons who manifest a similar talent, the anterior-superior lateral parts of the forehead are prominent and rounded. When this developement is excessively large, it is attended with a disposition, apparently irresistible, to view objects in a ludicrous light.

Natural functions and uses.—More extensive than the word *wit* generally implies.

Probably in a large sense, the power of imagining, perceiving, and pointing out differences and resemblances.

Subsidiary effects and influences.—The sense and enjoyments of the ludicrous; one of the constituents in humour; when united with combativeness and destructiveness large, it leads to satire; and even friends will then be sacrificed for the sake of a joke. It gives the talent for epigrams. Persons in whom this organ is small, consider wit as an impertinence, and are offended by it. It is greatly aided by comparison, which suggests analogies and resemblances.

Physiognomical expression.—The expression of wit, in the ordinarily used sense of the word, is well known by the laughing eye, a sort of half smile and sideward look. The indications of the general faculty are not perfectly ascertained.

Abusive and morbid manifestations.—Levity of spirit; a strong irresistible propensity to quibble and pun; extreme imobriety of intellect; a rage for unexpectedness of ideas.

Deficiency or low activity.—Seriousness of spirit; distaste for the ludicrous.

Illustrations.—Large in the masks of Sterne, Buffon, Voltaire, Henri Quatre; moderate in those of Sir J. E. Smith, Joseph Hume, M. P., and the Hindoos.

Remarks.—"It is not," observes Mr. Crook, "the definition of wit, but the function of a particular part of the brain at which I aim. Dr. Spurzheim, in some of his works, calls the faculty connected with this organ, "*the feeling of the ludicrous*;" in his more recent ones, *gayness*, and more recent ones *mirthfulness*. But each of these is probably an effect, and not a primitive power. The ludicrous owes its origin to the contrariety between the parts or means, as perceived by this faculty, and the general whole or purpose, perceived by comparison, or the necessary connection perceived causality; and gaiety, mirth, and laughter, arise from the mutual influence and re-action of the feelings. Some kinds of contrariety or incongruity excite one class of feelings, other kinds altogether different feelings; and consequently, according to the faculty or combination of faculties affected, the kinds of mirth and laughter are varied from the sardonic grin of destructiveness to the lover's smile. This view of the origin of laughter enables us to give a satisfactory answer to the hitherto perplexing question, "Why man is the only laughing animal?"*

* Crook's Compend. of Phrenology, p. 37.

No. 21.—IMITATION,

OR DISPOSITION FOR MIMICKRY.

Situation.—On the superior anterior portion of the forehead, between the organs of benevolence and marvellousness.

Discovery.—Dr. Gall gives us the following account of the discovery of this organ and faculty. “One day, a friend in conversation, respecting the configuration of the cranium, informed him that his had something particular, and directed his hand to the superior-anterior-region of the skull. This part was elevated into the segment of a circle, and behind the protuberance there was a depression. Previous to this, Dr. Gall had not noticed this conformation. This man had a particular talent for *imitation*. Dr. Gall directly repaired to the institution of the deaf and dumb, to examine the head of the pupil CASTEIGNIE, who, six weeks before, had been admitted and attracted notice by his powers of mimickry. On the *mardi-gras* of the carnival, when a little play was presented at the institution, he had imitated so perfectly the gestures, gait, &c. of the inspector, physician, and surgeon of the establishment, and also some women, that it was impossible to mistake them. This exhibition was the more amusing, as nothing of the kind

was expected from the boy, his education having been totally neglected. Dr. Gall states, that he quite unexpectedly found the part in question as fully developed in this boy, as in his friend Hannibal just mentioned. After this, Dr. Gall and his coadjutor visited the public establishments, particularly the theatres, and found it generally largely developed in performers and dramatic authors, and as a proof of the correctness of the existence of this organ, Dr. Gall mentions having seen a thief at Munich, in the house of correction, who possessed this organ very large; he immediately said, “*this man must be an actor!*” surprized at the observation, he acknowledged that for some time he had belonged to a strolling company of players. This fact was not known in the prison when GALL made his observations.

On these grounds, therefore, Dr. GALL conceived himself justified in admitting a particular talent for imitation; that is to say, a faculty enabling the possessor to personify in some degree the ideas and sentiments of others, and to exhibit them exactly by gestures; and he considers this talent to be connected with the particular organ now pointed out.

Natural Functions, Uses and Effects.
As just stated by Dr. Gall, it enables the individual to possess the power of copying and

observing those peculiarities constituting the obvious characteristics of persons and things; also an aptness and expressiveness of manner in relating what has been observed, with a tendency to copy nature, in resembling others in persons or things.

Physiognomical expression.—The activity and facility of children in imitating what they see and hear, without knowing the meaning, are unequivocal evidences and expressions of the exercise of this power, which, also, is often abundantly manifested both by grown-up persons and various animals.

Abuses.—Mimickry; aping; off-taking; buffoonery.

Deficiency, or low activity.—Want of flexibility or versality; inability to get out self-constituted habits.

Illustrations.—As this faculty is necessary in the portrait painter, sculptor and engraver, Mr. Combe found, on examining the heads of Messrs. Douglas, Joseph Uwins, W. Allan, James Stewart, and Mr. Selby, (the celebrated ornithologist), it large in them all. As also in Raphael, Shakespeare, Corneille, Voltaire, and Sir W. Scott, whose works are strongly characterized by their dramatic scenes; small in Jacob Jervis.

Remarks.—The direction of this faculty is determined by the combination of the

powers, or the predominance of one or more of them.

It aids the musician and linguist; and, in short, all who practise arts in which expression is an object.

As imitation gives a tendency to express by gestures, the thoughts and feelings of the mind, it is a necessary requisite in the accomplished orator. In private life, some individuals accompany their speech with the most forcible and animated expression of countenance, the nascent thought beams from the eye, and plays upon the features, before it is uttered in words.

This is produced by much imitation, secretiveness, and ideality.*

This organ is possessed by many of the lower animals, as monkeys, parrots, dogs, &c. &c.

* Combe's Phrenology, page 369.

CHAPTER XV.

Of understanding, or the intellectual faculties.—The external senses.—Doublicity of the organs.—Consciousness that every sense is single, and not in combination.—Senses of touch—taste—smell—hearing—and sight.

DR. SPURZHEIM denominates as intellectual every faculty, which procures man or animals any kind of knowledge, cognition of any impression, be it of hunger or thirst, of the sensation of fatigue, pain, the affective functions, or the existence of external objects, their relations or qualities. Knowledge, then, is the essential object of the intellectual faculties.

The external senses.

The external senses permit man and animals to enjoy intercourse with beings by which they are surrounded, and through them alone that determinate consciousness of the external world is acquired; were it not for these, man and animals would only possess an *internal* existence, not, as stated by Richerand, a mere vegetative life. "What," says Dr. Spurzheim, "can be more interesting to man

than his senses ?” Hence, the assiduous study of their functions and structure by anatomists, physiologists, and philosophers, who, notwithstanding their laborious researches, have left many very important points in obscurity. On the contrary, numerous extravagant and contradictory theories have been the result of their labours. I shall here briefly advert to a few.

I am not aware that the effective powers have ever been derived from the external senses. This, however, is not the case as respects the intellectual faculties. According to many ancient philosophers, all our ideas are innate. Since the time of Bacon and Locke, the greater number of philosophical systems rest upon the axiom of Aristotle, that all ideas enter the mind by means of the external senses. Now, if the ideas and sensations of man and animals are either produced or excited, solely or specially, by one or other of the five senses, they ought to manifest capacities only according to external circumstances and accidental impressions; their faculties ought to bear relation to the state of the five senses, and to the education these have received; and individuals ought to be susceptible of change and modification at pleasure. Daily experience, however, contradicts this hypothesis, with all its conclusions.

Another class of philosophers maintain that the mind acts independently of all organization, and that the senses are rather an impediment to, than instruments in, its action. They complain much of the illusions of sense, and despise all testimony to them, that only is truth which may be conceived by the understanding alone. If the influence of external objects, of social institutions, of education in general, be denied, it would be to contradict the history of all times and of every individual. If truth resulted from reflection alone, it would be easy to establish general laws, and it would be unnecessarily painful to collect a great number of facts, also to perform experiments in order to deduce general principles. But history proves the insufficiency of reflection alone, that is, of reflection unguided by experiment.

Finally, another set of philosophers admit two sources of intellectual manifestations, an external and an internal ; on one or the other of which, all are dependent.

I shall first consider some generalities of the external senses, afterwards show that many faculties attributed to them cannot result as effects of their activity, and, in fine, examine the special functions of each external sense.

GENERAL TIES AS TO THE FIVE EXTERNAL SENSES.

I.—*Doublicity of the organs.*

The organs of every external sense, as of the functions of animal life in general, are double; for example, there are two eyes, two ears, two nerves of smell, of taste, and of touch. Some authors deny that the cerebral organs are double; but we find on examination that this denial was founded in their mistaking doubleness for symmetry. It is acknowledged that both sides of the brain are seldom found symmetrical; but is not this the case, with the eyes, the ears, and other double parts? Thus, the absence of symmetry does not prove that they are not double. Indeed, the nerves generally are larger and stronger on the right side than on the left. Some maintain that the right hand and foot are larger in the generality of cases, because they are more used and exercised than the left. But this may be answered by the fact of the plurality of infants being right-handed. Of ten children born, there are perhaps seven who from birth employ the right hand without any teaching; and though the remaining three be taught to use it, nevertheless they feel greater strength in the left. But the superior power of the right hand is not the

result of exercise, for, as already stated, all parts of the right side are more powerful than of the left, even to the hemisphere of the brain.

The left side is frequently attacked by disease; and we find in conclusion, that all the organs of animal life are double, while those appertaining to vegetable existence are almost generally single.*

2.—*The consciousness that every sense is single and not double, or in combination with others.*

Another very important peculiarity of the five senses is, that while each has two sentient sets of apparatus, and accordingly, receive double impressions; yet, the consciousness is still only single. Each sense is perfect in itself, and receives impressions from its own organs, and does not appear to have any combination, either directly or indirectly with any of the others. I shall first examine the

Sense of Touch.

Feeling is the most extensive of all the

* Spurzheim's Phrenology, p. 218.

senses; it is continued not only over the whole external surface of the body, but even over the intestinal canal. It produces the most general perceptions of pain and pleasure, sensations of temperature, of dryness and moisture. All its other functions which procure notions of existing objects and their relations, are only mediate. Dr. Spurzheim is of opinion, that even the ideas of roughness and smoothness belong to an internal faculty, *viz.*, configuration. The mediate function of the sense of feeling may be called *touch*, of which the sphere of activity is very considerable and important: it is particularly combined with the nerves of voluntary motion, and the two kinds together may aid the functions of all internal faculties, as well affective as intellectual. Hence the reason why nerves of feeling and motion are most intimately connected with the organs of the affective and intellectual faculties. The five external senses, it may, indeed, be readily conceived, should be in connection with those cerebral organs which they particularly assist; and further, as the nerves of motion and of feeling may aid all internal faculties, that they should be in connection with all the internal organs, just as the nerves of feeling and motion, mutually aid, and are connected with each other.

Sense of Taste.

This is the record sense, that permits man and animals to become acquainted with external bodies, whenever these come in contact with the sentient organ. After the preceding sense, the present appears to be the most general and important to all living beings, who consciously take their food, and common observance shews us, that it is active in the early periods of our existence. The fifth pair of nerves, (*nervi trigeminum*) distributes branches and filaments to the palatine membrane, *velum pendulum palati*, pharynx, and the tongue. This pair is of great size in new-born infants, as also the nerves of motion and feeling.

Many physiologists suppose, that the acuteness of taste chiefly depends on the nervous papillæ of the tongue, and on its flexibility, softness and moisture. Professor Ackerman, who derives his idea of the perfection of the human mind from the acuteness of the five senses, asserts, that the nerves of taste are proportionally more considerable in man, than in the other orders of animals; that the tongue of man is the most flexible and soft, and its nervous papillæ covered with the finest skin. In many animals, however, as in the dog, monkey, &c., the lingual membrane is as delicate and flexible as in man. The

mobility of the tongue, has indeed less relation to the taste than the function of speech. The principal condition to an acute taste is certainly the large gustatory nerves spread over a considerable surface; but, in this point, many animals surpass man. In some, the lingual nerve as well as the whole fifth pair, is much larger than in the human kind; the nervous pappillæ of the tongue are also more numerous, and their apices more extensive. Though the tongue of several species is covered with a very rough skin, they distinguish and select certain plants conformable to their taste, and reject others which are contrary to it.

Some naturalists have maintained that the taste of birds is very obtuse. This is decidedly incorrect. Blumenbach has proved that the organ of taste is large, and the sense exquisite, in the duck. Many birds do not swallow their food suddenly; the titmouse, for instance, laps it. Those who principally feed upon insects, seeds, and berries, crush and bruise them. We find from common observation, that if we present the bullfinch, canary-bird, nightingale, &c., with different species of food, each chooses that he finds most agreeable to his palate. Those birds who swallow suddenly their food, as fowls, pigeons, and others, distinguish different berries and seeds with the extremity of their bill.

M. Dumeril, professor of physiology at Paris, maintains* that fishes are destitute of taste: this sense, according to him, being supplied by that of smell. This is doubted by Dr. Spurzheim, who observes, that there is not only no anatomical reason to deny taste to fishes, but it is even from their possessing this sense that they may be taken with a bait. In short, this opinion of Dumeril is more remarkable for its singularity than for its correctness.

The very lowest tribes of the animal world must also have nerves of taste. Insects are known to prefer different kinds of foods, although their gustatory nerves have not yet been discovered.

The Sense of Smell.

By the aid of this sense, the external world begins to act upon man and animals from a distance. Odorous particles detached, inform them of the existence of particular bodies. Many illustrious physiologists consider smell as a completion, or a finer and higher degree of the organ of taste. But the olfactory nerve is curious; it is, as it were, the guide and explorer of the sense of taste, and must therefore exist very low in the scale;

* Essay on the Smell of Fishes.

insects are attracted by odours, but their olfactory nerve has not yet been discovered.

It is universally admitted by all zoologists, that many animals excel man in acuteness of smell; their olfactory apparatus being much larger. But this occurs indifferently among the most stupid and the most intelligent animals—in oxen and hogs, in dogs and horses.

Baron Cuvier maintains, that the olfactory nerve is larger in carnivorous than in herbivorous animals: but there is no relation between the acuteness of smell, and the instinct to eat flesh and vegetables. Man is omnivorous; and the sea-calf, (seal) which lives only on fish, have both very small olfactory nerves. The mole, ox, sheep, horse, &c. &c. however different their food is, have an olfactory nerve proportionally larger than the wolf, dog, tiger, &c. ; comparative anatomy, therefore, as also comparative physiology oppose Cuvier's theory. Many hundreds of plants supply herbivorous animals with food, while the carnivorous live commonly upon a smaller variety of flesh; to distinguish their food, therefore, the organ of smell in herbivorous, should be larger than in carnivorous animals. Moreover, if nature endowed carnivorous animals with a very acute smell, for the purpose of discovering their prey, it is improbable that she refused the weak victim an equal advantage, to en-

able it to detect and escape its enemies. Odours act powerfully upon the brain; we, therefore, apply stimuli to the olfactory nerves, which often receive sensibility in cases of suspended animation.

The smell in its immoderate functions perceive odorous particles emanating from external bodies, and thereby informs man and animals of the existence of these elements; all functions besides are mediate, it assists the faculty which conceives the existence of the world; it admonishes animals of the proximity of friends or of enemies, and brings those which live solitary together for several purposes.

The olfactory nerve seems to have a more particular connection with the anterior lobes, and convolutions of the brain situated side-ward and outwards. In animals, it chiefly assists the faculty which knows individuals. The nose is also near the mouth, taste, and smell, bearing such relation one to another.

The sense of hearing.

Hearing is the second sense which makes man and animals acquainted with remote existence, and is the first which perceives external objects by an intermedium, the air. The auditory nerve is found from man down to the cattle fish; farther it has not been distinguished. Though several animals lower

in the scale are not destitute of hearing, the auditory apparatus is more complex, as animals are more perfect; and this is the case both with the external and internal ear. Except Ackermann, all physiologists allow that many animals surpass men in the faculty of hearing. That physiologist, however, deriving human intellectual superiority solely from the external senses, asserts that the hearing of man is the most perfect, on account of the cochlea of his ear, which, according to him, is the most essential part, and is wanting in animals. But this assertion may be refuted both anatomically and physiologically. First, it is certain that the organ of hearing is more perfect in many animals than man; that their external ear is larger, more moveable, and capable of being turned in all directions, and opposed to soniferous undulations. Moreover, the auditory apparatus of many animals has large cavities which increase the sonorous vibrations, and which cannot be confounded with the mastoid process of man. In some, these are empty; in others, they are divided into compartments; and in the ox, horse, stag, sheep, &c. than in man; and the cochlea not only exists among them, but is in many even more perfect than in the human kind. Hence, it is anatomically proved, that the organ of hearing is in many animals larger and more perfect than in man.

The same may be demonstrated physiologically. In observing the functions of animals, we may convince ourselves that many of them perceive sounds which are imperceptible to man. The same sense of hearing is not active in new born children, but it improves by degrees, and in proportion as its apparatus is developed, in the same way the auditory power declines in proportion as the vigour of the organ decreases. Several authors maintain that the deafness of old persons depends on the blunted sensibility of the auditory nerve; they think that repeated impressions exhaust sensibility. It is, indeed, true that sensibility is blunted and exhausted by too great exercise; but I think that, in the ordinary state of health, dullness of hearing depends on the decrease of the auditory apparatus. In the young and healthy, the auditory nerve is expanded in a position which occupies the cavities of the internal ear; this, in the aged, diminishes at the same time that the nerve decreases. Hence, when Pinel, during the severe winter of 1798, caused the skulls of several old women who had lost their hearing to be frozen and then opened, he found the cavities of the external ear to be perfectly empty, while they were filled with ice in younger persons who died with this sense unimpaired.

The immediate functions of the sense of

hearing are confined to the perceptions of sounds; yet it assists a greater number of internal faculties which are commonly attributed to it. We may conceive that the sense of hearing is modified in different beings, and bears relation to the internal faculties with external objects, as the laws of vibrations for instance, though they exist in external vibrating objects, are conformable to the laws of the internal faculty of time, or as size, number, and succession which exist in the external world, are in relation to certain internal faculties.

The sense of hearing potently aids the affective as well as the intellectual faculties of space, individually, tune, speech; and through the instrumentality of these, all the other powers of the mind. The auditory nerve, indeed, has a nearer connection with the organs of the feelings than of the intellectual faculties; it embraces the nervous bundle of the cerebellum, and is connected with the vocal nerves; the voice called forth by command of the feelings, as well as the natural language of their activity, is more energetic than when summoned by the intellectual faculties to aid them in the expression of their desires.

The sense of sight.

Sight is the second sense which informs

men and animals of remote objects, by means of an intermedium—light. Those who attribute the excellence of man's intellectual faculties to the perfection of his senses, maintain that his sight is better than that of other animals. They consider this superiority as a result of the greater distinction with which they say objects are seen by man to the transparency of the diaphanous parts of his eye, to the irritability of his iris, and to the position of his crystalline lens; some even believe that the pigmentum nigrum impedes and disturbs the distinctness of vision; and that, perhaps on this account, animals have false and exaggerated ideas of the power of man. Experience answers these errors: the iris of many animals is very moveable, and they see both the day and night, and to greater distance than man. The falcon perceives the heron, still invisible to man; the eagle, beyond the reach of human sight, sees a hare upon the ground; the turkey and fowl recognise the far distant bird of prey, and warn their surrounding broods, when it is impossible for man to distinguish the enemy. It cannot be denied, therefore, that the sense of sight is more acute in many animals than in man.

None of the senses has occupied physiologists and philosophers more than sight and touch; but these have also been the subjects of the greatest number of errors. Many

false notions have been, and still are, current in regard to vision. This sense has been said to acquire its faculty either by touch or by habit. But I have already proved, in speaking of the generalities of the external senses, that no one acquires it from any other but from habit. Vision depends on the organization of the eyes; and according to this, it is weak, energetic, good, or bad. Some animals enter the world with perfect eyes, and they see accurately from the first. The butterfly and honey-bee fly on the first attempt through the fields, from flower to flower; and the partridge and chicken, as soon as they have left the shell, run through the stubbles and corn; while other animals, born blind, distinguish size, shape, and distance of bodies, only by slow degrees. This is the case in the human kind. I cannot insist too forcibly on the truth, that every sense has its own laws, and its own functions depend on the state of all organization. In the looking-glass, we must see ourselves and other objects enlarged, diminished, lengthened, shortened, multiplied, near, distant, and so forth, according to the laws of the reflection of light. Some also maintain, that without the sense of touch, our eyes would represent all objects reversed and double; and that the external world would seem to be in the eyes, because it is painted on the retina; objects are actually reversed in

the eyes; but, as Berkeley and Condillac have elucidated, they are not painted on the retina; that nervous expansion is only impinged on by rays of light; how or why we see objects upright, is not, however, explained. An external faculty, makes animals acquainted with the external world, and they are more disposed to transfer all internal sensations and ideas of external bodies to the outward world, than to concentrate impressions of these inwardly. According to the law of nature, the impressions of our senses are not merely transferred into the external world, but are even carried to the places where they come. We deem the sonorous body to be in the direction from whence come vibrations of air; and if animals take wind, they do not look for the impressions received in a direction, opposite to that whence they proceed. Impressions of light, are also referred to the place whence they emanate; and consequently, such as arrive from above are referred upwards, those from below downwards, and an object is thus seen in its right position.

No one recollects having in his infancy seen any objects reversed; and natural history presents no such example in animals. According to the absurdities into which speculators run, young birds ought to take the root of a tree for its top. It is unfortunate, that natural philosophers and physiologists, in ex-

amining the functions of the senses, have confined their reasonings to man alone ; thus excluding animals entirely. I have now spoken of vision being single, although the impressions are double ; of the eye's capacity to distinguish distance ; and shewn, that animals cannot measure distance exactly between themselves and external bodies, only when their eyes are imperfect. Thus the organ of vision has its peculiar faculty, whose manifestation depend on the state of the eye's organization ; and vision, like every other sense, is subject to invariable laws of its own. A straight stick half plunged in water, must needs appear crooked ; in a vessel filled with water, we see a stone, or other body, at the bottom, which is invisible, circumstance remaining the same, with the exception of the vessel being empty. The most learned men, notwithstanding all conviction to the contrary, see images behind the looking glass, as do parrots and monkeys. We see our person reversed in the concavity of a spoon, our right hand on the left side, and our left on the right ; but in a conic mirror, convex in the circumference, and concave from the basis to the apex, we see our persons also reversed, but the right side opposite the right, and the left opposite the left, as in a common looking-glass. We know that the last two in an avenue of trees, are as distant from each

other as the nearest ; yet, the distance appears to decrease as they are more remote. A square tower from afar off, appears round ; and mighty trees, in the distance, seem no larger than small bushes at hand ; still, these and similar conceptions, are in accordance with the optics.

Those who reproach the sense of sight with committing the errors I have refuted, call to their aid the experiment of Cheselden, on a person born blind, as in Cheselden's own account of the experiment, there is no mention of double reversed vision after the operation ; Le Cat, therefore, said that these persons were acquainted with the situation of objects by touch, and consequently, could not easily be misled by their sight when it was acquired. I, however, ask, why they were not acquainted with the size and shape of objects, and why, though feeling informed them objects touched not the surface of their bodies, they still seem to touch their eyes ? This even happened in the case of the blind-born individual, who underwent the second operation twelve months after the first ; and who, consequently, was already acquainted by the one eye with external bodies, and with their size and shape ; yet, the testimony neither of his touch nor of his sound eye, was sufficient to persuade his other eye that portraits were not elevated subjects.

Diderot has very well answered this reproach made against sight : “ Pictures,” says he, “ produced the same effect upon savages, when they saw them the first time—they took portraits for living persons ; they spoke to them, and were much astonished at receiving no answer. We ought to consider,” continues Diderot, “ that vision cannot be perfect before organization is. The humours of the eye must become clear, the iris must be conveniently dilatable, the retina not too highly sensible, and the whole eye-ball fit for exerting all the particulars necessary to distinct vision.” He also says well : “ Sight is not necessary in order to be sure by touch that any substance exist ; why should touch be necessary to sight, in order to be sure by sight that the same thing exist ?”

The immediate functions of sight are confined to the perceptions of light, still its other offices are mediate ; the eyes may assist all external senses, all the affective power, and all the intellectual faculties. The connection of the optic nerve with the brain, also shows that sight chiefly assists its posterior, lateral, and anterior parts.

Thus, the spheres of immediate activity of the five senses, are very limited : feeling only perceives dryness, moisture, and temperature ; taste savours, smell odours, the ears sound, and the eye light ; all other functions, therefore, are only mediate, that is internal senses

perceive various impressions, conceive peculiar ideas, recognize the existence of bodies and their qualities, and again act upon the external world by means of the senses and voluntary motions.



CHAPTER XVI.

Every sense has its peculiar nature.—Each sense may be exercised.—The function of every sense modified.—Functions to be denied to the five senses.—The external senses do not produce the means of their own gratification.

EVERY SENSE HAS ITS PECULIAR NATURE.

A THIRD generality of the five senses, is, that its own power suffices to each, to perform its function. Much has been said of their mutual rectifications of the senses, and of their habit ; it is a general principle that the power of capacity of every sense, is inherent in the sense itself. The relation of the senses to external impressions is determinate, and subject to positive laws. As soon as odoriferous particles impress the olfactory nerve, the impression is at once either found to be agree-

able, or otherwise; and according to this relation between external impressions, and external senses, the manner of acting of man and animals vary; no preceding exercise or habit furnishes each sense with its special power; this depends on its peculiar organization alone. If the organization be perfect, the functions are in like manner; and if it be imperfect or diseased, these are defectives or derangements, notwithstanding all preceding exercise. If the optic apparatus be perfect in birds when they break the shell, their sight is perfect; on the contrary, if the organization of the eye and ear in new born animals be imperfect, seeing and hearing are the same; and if the eyes of adults be diseased, vision is deranged: in the aged the functions of the senses lose their energy, because the vital power of the organs decrease.

It is, indeed, absurd to suppose, that nature should have produced any sense incapable of performing its function, without support from another and different one; for example, that the eye should see without the aid of touch, or the ear not hear without the assistance of sight. We must, therefore, enter into the following position: none of the senses acquire its faculty from any of the others; every sense cannot produce alike sensations; different senses may distinguish existing objects; and one sense is fitter than another to acquaint us

with particular bodies and their qualities. The laws of sight are determinate, and a straight rod half plunged into water appears crooked, because it is seen according to the laws of refraction of light; touch, however, proves, that the rod is straight. This is a kind of rectification; but this must not be confounded with the ideas, according to which, one sense acquires its faculty by the rectification of another. Touch may show that a rod plunged into water, which looks crooked, is straight; but the eyes will always see it crooked. Such rectification of the senses is mutual and general, not in the prerogative of any one in particular, the eyes may rectify the sense of touch. If, without our knowledge, a piece of thin paper be placed between our thumb and forefinger, we may not feel but see it; even smell and taste may rectify the sense of sight and of touch. Many fluids look like water, feel like water, but smell and taste proclaim them different: thus every sense has its peculiar and independent faculty, is subject to constant laws, and depends on the taste of its appropriate organ for its capacity to perform its office; but every sense also recognises impressions imperceptible to another, and in this way are the senses mutually aidant in coming to exact notions.

EVERY SENSE MAY BE EXERCISED.

Another observation generally applicable is, that though no sense acquires its faculty by exercise, yet the function of every one is strengthened by it. The sense of feeling long and carefully exercised, acquires a high degree of perfection; thus the blind know the proximity of external objects, by the impression of the air upon their faces. Le Cat speaks of one born blind at Poiscaux, who distinguished the distance of fire by the degrees of its heat. Dr. Saunderson, though blind, in handling a series of medals, discerned the false from the true more exactly than many connoisseurs. Le Cat mentions a blind sculptor, Gambasius of Volterra, who traced the living face with his finger, and modelled it in potters clay. The deaf and dumb, in the institution of Eschke at Berlin, knew perfectly what was written on their backs, though covered with clothes. Boyle and others have related histories of the blind, whose touch was so acute as even to enable them to distinguish colours and their shades; the same thing is stated of the blind Weissenbourg of Mannheim. This man had about thirty pieces of different coloured cloths, and could indicate with precision the hue of each; but he often made mistakes in the colour of strangers clothes. The cards which he played

with were marked: he did not distinguish them by their colour, as those who were not acquainted with this, imagined. Many blind persons possess an incapacity to distinguish colours; a few, however, discern white from black, because white surfaces are in general smoother than black. When the blind pretend to distinguish colours, they seldom do more than determine surfaces of greater or less degree of smoothness, without acquiring any idea of colour in dress.

The sense of taste, as well as every other, is strengthened by exercise. Certain articles are tasteless or unpleasant at first, for instance oysters; but having been eaten several times, their particular flavour is distinguished. A common opinion is, that the sense of taste is blunted by spiced dishes and refined cookery; but who will maintain that our cooks and dainty mouthed gourmands, have a more obtuse taste than savages, who distinguish the flavour of some roots insipid to a civilized palate? Do not frequent accidents from poisonous vegetables, as hemlock, belladonna, and improper mushrooms, prove that the taste of the sober countryman is no surer guide than that of the voluptuous citizen? We must, however, admit, in regard to taste, what happens universally; too strong impressions blunt its sensibility; the function

grows more energetic only by a due quantity of exercise.

The sense of smell may also be exercised. Many physicians on entering a sick room, distinguish the kind and state of certain diseases.* It is related that some negro tribes follow others by scent as dogs do, and even distinguish between a negro and an European. Smell is blunted by the application of every strong and penetrating odour: conformable exercise alone strengthens its functions.

The sense of hearing, like the senses already spoken of, is cultivated by exercise. The blind Weisenbourg, of Manheim, judged exactly of the distance and stature of persons, who spoke to him standing. The blind Schoenberger, of Weide, in the upper palatinate, had the sense of hearing so acute, that it was sufficient by tapping to indicate the place where the nine-pins were set up, or the situation of the target to be shot at, to enable him often to throw or shoot successfully. Blind persons, indeed, often find a pin or piece of money, which makes a noise in falling.

Finally, the eyes acquire a very high degree of acuteness by exercise. Le Cat men-

* A friend of mine, an army surgeon, the moment he enters a room where a patient is confined by typhus fever, can instantly detect it by its peculiar odour.

tions a deaf woman of Amiens, who distinguished what persons said from the mere motion of their lips ; when a foreign language was spoken, she discovered it immediately. Dr. Gall and his colleague, observed similar cases at Berlin and elsewhere ; nay, they conversed with several who understood them, even when they concealed the mouth ; the motions of the face were sufficient. It follows then, that though exercise produces not the faculties of the external senses, the functions of each may still be rendered more energetic by exercise.

THE FUNCTION OF EVERY SENSE IS MODIFIED.

A fifth general consideration of the external senses, is, that their functions are modified, not only in different kinds of animals, but even in different individuals of the same kind. The taste and smell of carnivorous animals, undoubtedly differ ; the ox and horse find hay to be savoury, while the dog and wolf find flesh to be well tasted. The senses are also modified by different ages, according to peculiar habits or circumstances, and even participates in the various states of health. This fact explains the longings, felt during pregnancy, or experienced by hypochondriacal and hysterical people, and also

why we are sometimes disgusted with what we formerly liked; moreover, several substances, inodorous to man, make a strong impression on the olfactory nerves of certain animals. Some animals are too much excited by odours, to which others are indifferent; one odour is agreeable to one individual, and disagreeable to another; in the same way, the eye and ear must differ in animals living under water, from those of creatures which inhabit the air. The eyes even differ in those animals which see in night, from those which see during the day. One individual likes a colour or a sound displeasing to another; thus the functions of the external senses are universally modified.

FUNCTIONS TO BE DENIED TO THE FIVE SENSES.

To specify the functions of the external and internal senses, is an essential point of phrenology; however difficult the task may be, physiology, in this department, is but little advanced; and whether the external senses have consciousness or not, is still a matter of dispute. The axiom of Aristotle, that all activity of the mind depends on the external sense, is not less erroneous, than is the assertion, that the sense of touch is the cause of instinctive labour of animals, and the

mechanical arts of man. It is easy to show, in a general way, that the notions of external objects acquired by man and animals, are not merely dependent on the external senses; and in particular cases, that such and such a talent is not the effect of this or that individual sense. Let us begin with the general refutation.

That the cognition acquired by animals and men of the external world, and the superiority of the human understanding, cannot be attributed to the external senses, appears to me in this, that there is no proportion between intellectual operations and the senses, either in different species of animals, or in different individuals of the same species. Many animals surpass man in acuteness and strength of external sense; yet none approaches man in understanding. Moreover, idiots frequently possess very perfect senses, while the most intelligent have them occasionally very weak. A fact, mentioned by the illustrious Darwin,* also proves that the five senses are mere intermedia, and that the import of their impressions must be judged of something internal. An old man, who had had a paralytic stroke, preserved the senses of hearing and of vision untouched; he however could only receive ideas by means of

* *Zoonomia*, third edition, vol. iv. p. 295.

the latter. When he was told that it was nine o'clock and breakfast time, he repeated the words distinctly, yet without gaining any information from them; but if his servant put a watch into his hand, and showed him the hour gone by, he said, "Why, William, have I not my breakfast?" On almost every occasion his servants could only converse with him by means of visible objects, although his hearing was perfect.

THE EXTERNAL SENSES DO NOT PRODUCE
THE MEANS OF THEIR OWN GRATIFICATION.

The five external senses receive and propagate impressions, which affect them agreeably or disagreeably; but they cannot produce the means of their own satisfaction. Therefore, animals are confined to the enjoyment of those impressions presented to them by nature. They prefer the taste of one thing to that of another; also particular odours, colours, sounds, but they cannot, at will, command or excite impressions calculated to gratify the senses of smell, sight, or hearing. Man, alone, is capable of this; he, alone, in order to procure pleasure by the medium of his senses, cultivates gardens, and manufactures perfume; he alone plants flowers to gratify his smell, and delight his eye. Man, however,

has not conceived these arts by means of smell; for this sense is much more acute in the ox, horse, and dog, which cultivates no flower garden, and which have no rose-water. In the same way, animals have no cookery, and no musical instruments; they cannot voluntarily charm their palate or their ears. We shall afterwards see, that man possesses the power of doing so, by means of some superior intellectual faculties which produce enjoyments, to the perception of which the external senses are, however, essential.*



CHAPTER XVII.

The organs of Individuality, Configuration, Size, Weight, or Resistance, and Colouring, described.

No. 22.—INDIVIDUALITY.

Situation.—The cerebral part, on which this manifestation depends, is situated behind the root of the nose, and its greatest develop-

* Abridged from the interesting article on this subject, in Spurzheim's Phrenology, p. 252.

ment enlarges the forehead between the eyebrows, producing that beautiful form of nose denominated Grecian.

Natural functions and uses.—Conceived to be the faculty of observation, when taken in a philosophical point of view, and is exercised by our becoming acquainted, by whatever means, with facts, events and circumstances, simply as such, without regard to their uses or causes.

According to Dr. Spurzheim, “ it is the faculty which recognises the existence of individual beings, whose activity and presence are denoted by substances in language. I acknowledge, that no objects are inseparable from their qualities, and that these constitute objects; but I think it possible to conceive existence or entity, without knowing its qualities, as GOD—the mind. This faculty excessively active, is, like all the others, liable to be abused. It inclines to personify notions, and even phenomena. The agency of individuality is observed in every branch of science. In philosophy it has originated numerous and grave errors. It has personified motion, life, disease, attention, memory, judgment, imagination, the passions, &c. The kind of knowledge procured by individuality is essential and fundamental.”*

* Spurzheim's Phrenology.

Subsidiary effects, and influences.—The power of attending to, and becoming acquainted with, details; of recollecting instances, examples, peculiarities, consequently highly important to the man of business, and those whose professions require a knowledge of things around them. As a matter of course, it contributes essentially to education.

Physiognomical expression.—An air of inquisitiveness and prying, the very reverse of reverie or abstractedness; a manner somewhat bustling and active; a marked but easily diverted attention to particulars.

Abuses and morbid manifestations.—Minuteness and speciality of intellect; superficial disjointed knowledge; tedious prosing over individual heterogeneous things; interminable peculiarity.

Deficiency or low activity.—Dullness, slowness of mind as to passing events; abstractedness, inability to apply what is known; want of readiness in practical pursuits.

Illustrations.—Large in the masks of sir J. E. Smith, Roscoe, Fraser, Henri Quatre, Mary Macinnes, Swift, Le Sage, De Foe, and Sir W. Scott; moderate in Voltaire and Haydon.

Comparative illustrations.—By comparing one animal with other, or with man, it is obvious that tame animals have the forehead more developed than wild ones. It has been

a disputed point, whether this tameness is solely the work of man or nature ; this is soon decided, as we find them in both states, and those naturally wild, even when tamed, again become wild if neglected, or only are so, to particular persons, as their keepers. On the contrary, certain animals are tame without trouble : mice follow the abode of man ; and in Egypt, dogs, without any particular master, remain in the villages and towns, never go far from the dwellings of man, and are consequently originally tame.

Remarks.—To the artist, this organ is of great importance. Eventually, it enables him to give body and substance to his other conceptions, conferring on him a capacity for attending to details. In persons who excel at whist, generally possess this organ large ; in the practical man of business, and in those authors whose productions abound with strong impressions of reality, produced by particular objects. It is also large in those persons who are extremely observant of what is occurring around them, and who take an interest in general events and topics of the day.*

* The frontal sinuses is occasionally found large under the space marked 22, therefore, this limits the evidence in favour of the organ to the negative kind ; that is, when externally there is a depression, the brain in that part is necessarily small, and the mental power is invariably found weak ; but when there is an external

No. 23.—CONFIGURATION,

OR FORM.

Situation.—At the intellectual angles of the eyes, so as to give breadth between them; the cerebral portion lies close to the *processus cristatus* of the ethmoidal bone.

Discovery.—Dr. Gall was struck with the curious fact, that certain persons and animals recognize, with the greatest ease, individuals whom they have not seen for years, and even then only in passing. Being desired to examine the head of a young girl, who had an extreme facility in distinguishing and recollecting persons, he found her eyes pushed laterally outward, and a certain squinting look; after innumerable additional observations, he spoke of it as the organ of the knowledge of persons.

—*Natural functions and uses.*—To afford the power of judging of the quality of form in bodies.

Subsidiary effects and influences.—Dr. Spurzheim has analysed the mental power connected with the organ in question, and considers it as follows:—

elevation, the power is not invariably strong, as in some individuals the swelling outwards is caused by the sinuses and not by the brain.

“ To me, there seems to exist an essential and fundamental power, taking cognizance of configuration generally, and one of whose peculiar applications or offices, is recollection of persons: for persons are only known by their forms. I separate the faculty which approaches configuration from that of individuality, since we may admit the existence of a being without taking the figure into consideration. Individuality may be excited by every one of the external senses, by smell and hearing, as well as by feeling and sight; while the two latter senses alone, assist the faculty of configuration. It is this power which disposes us to give a figure to every being and conception of our minds; that of an old man to God; to death, that of a skeleton, and so on.” This organ “ varies in size in whole nations. Many of the Chinese I have seen in London had it much developed. It is commonly large in the French, and bestows their skill in producing certain articles of industry. Combined with covetousness, it invents the patterns of dress makers and milliners. It leads poets to describe portraits and configurations, and induces those who make collections of pictures and engravings to prefer portraits, if they have it in a high degree. It is essential to portrait painters; Crystallography also depends on it; and to me, it appears that conceptions of smoothness

and roughness are acquired by its means.”* It is highly important to the mineralogist, the mechanician, and is an essential constituent in a talent for the imitative arts.

Physiognomical expression.—Specific application to, or regard for the objects of the power, as noticed particularly in the Chinese and French.

Abuses or morbid manifestations.—Fastidiousness as to the form or patterns of things; inordinate fondness for imitating figures, whether by drawing, cutting on paper, or otherwise; and one of the elements in the disposition for caricaturing.

Deficiency or low activity.—Imperfect discernment and faulty recollection of the diversities in form; a consequent defect as an artist.

Illustrations.—The late king George III., was remarkable for his talent in recollecting persons; and the organ is decidedly large in his mask. In the casts of two Chinese crania, in the museum of the Edinburgh Phrenological Society, it is largely developed; in a collection of portraits of eminent painters, presented to the same society by sir G.S. Mackenzie, the organ appears uncommonly large in those who excelled at portrait painting. Dr. Gall is of opinion, that some authors that pre-

* Phrenology, p. 274.

sent the reader with descriptions of the persons they introduce, drawn with great minuteness and effect, for example, STERNE and MONTAIGNE, are distinguished for this practice ; and in their busts and portraits this organ is very conspicuously predominant. In Dr. Gall, this organ was very defective, for often on rising up from table, he has had no recollection of the person who sat next him, so as to be able to recognise him again in society ; and in consequence, he was not unfrequently exposed to many painful embarrassments, and aukward mistakes.

Comparative illustrations.—Some dogs, after the lapse of years, often recognise an individual whom they have only seen once, while others, after a few days absence, do not know again persons whom they have seen frequently. Monkeys, dogs, hares, elephants, and even birds, distinguish with greater or less facility their master, or those who have been kind or cruel to them among a thousand. All the animals which belong to a herd, and also all the bees in a hive, from 20,000 to 80,000 in number, know each other. When a stranger attempts to introduce himself, they drive him away or kill him.”*

Remarks.—The metaphysicians do not admit of a faculty of this nature. The senses

* Sur les Fonctions du Cerveau, tome v. p. 1. 2.

of sight and touch are instrumental in the due and proper exercise of this faculty, may be quite perfect, and yet the faculty itself possessed in a very low degree.

The frontal sinus does not affect this organ.

No. 25.—SIZE.

Situation.—Above the organ of configuration.

Functions and uses.—The faculty of distinguishing configuration differs from size; because there is an essential difference between the idea of size and that of configuration. The size may be the same, and the form differing, one of these kinds of knowledge may exist without the other; and there is no proportion between them. Dr. Spurzheim, therefore, inferred by reasoning, that there would be a faculty, the function of which is to perceive *size*; and observation has proved the soundness of this conclusion, for the situation assigned by him to the organ has been found correct.*

Effects and influences.—It is upon this organ that the talent for perspective principally depends.

* Combe's Phrenology, p. 268.

Physiognomical expression.—Special attention to perspective, and the relations of magnitude and space.

Abuses and morbid manifestations.—Scarcely known to be excessive, but possibly, certain hallucinations especially experienced in an imperfect light, may depend on an unusual endowment and diseased state of it. Also, great anxiety as to the fitting and size of garments, furniture, &c.

Deficiency and low activity.—Imperfect judgement of the size of bodies; consequent unfitness for certain practical pursuits.

Illustrations.—Large in the masks of Brumel, Williams, Douglass (the miniature painter), P. Gibson; small in Ferguson, a tutor in the family of sir S. J. Mackenzie.

Remarks.—The frontal sinus throws a difficulty in the way of observing this organ; and the negative coincidence is, therefore, chiefly to be relied on.

There is no necessary nor generally obvious connection between this and the preceding faculty.

No. 26.—WEIGHT,

OR RESISTANCE.

Situation.—Between the preceding organ

and that of colour, so as when large, to give a degree of heaviness to the eye-brow.

Functions and uses.—It creates the power of judging of the momentum or weight and consistency of bodies, and probably of adjusting the movements of the body to the laws of equilibrium. There seems, observes Mr. Combe, to be no analogy between the weight or resistance of bodies, and their other qualities. They may be all forms, sizes, and colours, liquid or solid; and yet, none of their features would necessarily imply, that one was heavier than the other. This quality, therefore, being distinct from all others, we cannot logically refer the cognizance of it to any of the mental faculties which judge of the other attributes of matter; and as the mental power undoubtedly exists, there appears reason to conjecture that it may be manifested by means of a special organ. Persons who excel at archery and quoits, also those who find great facility in judging of the momentum and resistance in mechanics, are observed to possess the parts of the brain lying nearest to the organ of size, largely developed; and staties, or that branch of mathematics, which considers the motion of bodies, arising from gravity, probably appertains to it.

Effects, and influences.—Importantly requisite it in mathematical science; and possibly, in a great variety of corporeal exertions.

Physiognomical expression. — Various movements of the body seem produced by, and indicative or expressive of this power, more especially such as conduce to the equilibrium or due balancing of the body.

A good endowment of this organ is necessary to all persons engaged about delicate experiments, works of art, balancing, &c.

Abuses and morbid manifestations.—Probably may prompt to some of the hazardous operations of the rope-dancer, &c.; and to many quixotic experiments and speculations.

Deficiency or low activity.—Unfitness and want of inclination for mechanical science; possibly, too, inexpertness in several sports and pastimes.

Illustrations.—Large in Dr. Chalmers, Dr. Brewster, sir James Hall, sir G. Mackenzie, professor Leslie, and in Mr. Jardine and Mr. Stevenson, two eminent engravers. Also in professor Farish and son, Mr. Whewell, the late Dr. Clarke the traveller, of Cambridge, and in the statue of sir Isaac Newton by Rubilliac. In the mask of Maclaughlan, a weaver at Saltcoats, N. B., it is large; this man has spent considerable time and money, in devising means for regulating the stroke of the common pump, so as to make the working rod move with the same momentum, up and down. Brunel, the celebrated engineer, has it large.

Remarks.—The phrenological student must be careful not to mistake a depression of the muscle, which sometimes takes place at this part, for a fullness of this organ.*

No. 26.—COLOUR.

Situation.—About the middle of the arch of the eye-brows, so as to give a full and projected appearance to that part of them.

Functions and uses.—Constitutes the faculty for distinguishing the shades and harmony of colours.

When the part, marked 26 on the bust, is largely developed, the individual possesses this faculty to a very great extent; and phrenologists admit this as a fundamental faculty of the mind.

Effects and influences.—The faculty of this organ affords great pleasure in contemplating colours, and a vivid feeling of harmony and discord. It is a constituent requisite in the arts of the painter, &c.; a source of pleasure in a contemplation of the sublime works of the Great Author of Nature.

* Sir G. S. Mackenzie uses the name "Resistance," in lieu of the term "Weight," employed by Dr. Spurzheim.

Physiognomical expression.—Distinct characteristic fondness for the special objects, the faculty.

Abuses or morbid manifestations.—Glar- ing exuberance of colouring, or faulty preference of it in the fine arts ; tulipmania.

Deficiency or low activity.—Little regard for this department of the art ; inability to distinguish tints and degrees of colour.

Illustrations.—Those persons having this organ small, experience no interest in colour- ing, and are almost insensible to the differ- ences in shades. Dr. Butler has related, in the *Phrenological Transactions*, a case of a Mr. Robert Tucker, whose eyesight was good, but decidedly unable to recollect, or even distinguish any of the primitive colours, even when shewn to him. “Orange he calls green, and green colours orange ; red, he considers as brown, and brown as red ; blue silk looks to him like pink, and pink of a light blue colour ; indigo he describes as purple.”* This gentleman’s head is reported to be decidedly deficient of this organ.

The case of Mr. James Milne, brass-foun- der at Edinburgh, is also peculiarly illustra- tive of this faculty.† Large in Wilkie, Hay-

* Page 210.

† The case was obtained by Mr. Combe from Mr. Milne himself, and is well worth the reader’s attention. See Combe’s *Phrenology*, p. 297.

don, Williams, Douglass ; and in Mr. Tennant, the author of *Awster Fair*. MOORE has numerous allusions to colour in his lyrical poetry, many of which are exquisitely beautiful and appropriate, and therefore, with Mr. Combe, I think we may infer, that it is large in this delightful poet.

Remarks.—This faculty appears to be quite unconnected with the eyes.

Dr. Gall considered it as an indubitable fact, that determinate laws of proportion in colours actually exist. “ The three primitive colours of blue, yellow, and red,” says he, “ do not harmonize. If we mix two of these, an intermediate colour is produced. Blue and yellow give a green; blue and red, a violet; red and yellow, an orange. To obtain a harmonious combination, we must place alongside of a primitive colour, one that is mixed, into which the primitive enters as an element; the mixed colour will always be in harmony with the two primitive colours from which it is produced. If we place a silk ribbon of a blue colour, and about an inch broad, on a sheet of white paper, and look at it steadfastly; at the end of a short time, we shall see, besides, yellow and red, and (at the side) orange, resulting from their mixture.*”

* GALL. Sur les fonctions du cerveau, tome v. page 32.

We in general find this organ larger in women than in men, particularly in the lower classes ; for example, we often see servant girls bedecked in a profusion of colours, whereas, uniformity and taste is generally exhibited in the more respectable and higher classes of society. Some women as *colourists*, have not unfrequently equalled the masters among men, while as *painters*, women in general have always been inferior to the other sex. The faculty of the flower painter, enameller, dyer, and, in general, all who occupy themselves with colours. Its great energy gives a passion for colours, but not necessarily a delicate taste in them. Taste depends on a perfect, rather than a very powerful activity of the faculties. In several oriental nations, for example, the faculty appears, from their love of colours, to be strong ; and nevertheless, they display bad taste in their application.*

* Combe's Phrenology, p. 203.

CHAPTER XVIII.

GENUS III.—*Intellectual faculties, which perceive the relation of external objects.*

Description of the organs of Locality, Calculation, Order, Eventuality, Time, Melody, and Language.

No. 27.—LOCALITY.

Situation.—Over the organs of size and weight.

Discovery.—In the youthful days of Dr. Gall, he experienced great difficulty in finding his way back through the woods, when he went birdnesting; for although he was expert in discovering the nests and birds, yet, he had trouble to discover even the trees he had marked to facilitate this object. This difficulty did not arise from inattention, for before quitting the spot, he stuck branches in the ground or marked trees, but all in vain. He was obliged to take his companion with him, who possessed this organ very large, and consequently found his way with great facility. This made a great impression on the philosophic mind of GALL, and led him to enquire into the reason; he took a cast of his

head; subsequently, he found it large in travellers, and others fond of a wandering life; among whom was M. Meyer, author of "Diana Sore," who was never easy but when on a journey. Sometimes he attached himself to a man of fortune, to accompany him in extended travels; at others, went from house to house in the country, possessing an astonishing faculty in remembering the various places he had seen. It was also very prominent in the forehead of SCHÖENBERGER, the celebrated landscape painter, who informed him, that in his travels he only made a general sketch of countries which interested him; but afterwards, when he wished to produce a more complete picture, every tree, every group of bushes and stone, came spontaneously to his mind. From subsequent observations, Dr. Gall was led to suppose, that the talent for remembering places, depended on a primitive faculty of the organ, was placed under this part of the cranium: other phrenologists have confirmed this supposition.

Functions and uses.—Dr. Spurzheim informs us, "that the special faculty of this organ, and the sphere of its activity, remain to be determined. It makes the traveller, geographer, and landscape painter, recollect localities, and gives notions of perspective. It seems to me, that it is the faculty of locality in general; as soon as we have conceived

the existence of an object and its qualities, it must necessarily occupy a place, and this is the faculty that conceives the places occupied by the objects that surround us."* Sir G. S. Mackenzie is of opinion, that the primitive faculty is that of perceiving relative position.

Effects and influences.—Appears to constitute a disposition and talent for various studies, as geography, astronomy, and landscape drawing.

Physiognomical expression.—The instinctive migrating propensity of certain animals, seemingly quite independent of reason; and there is ground to suppose, that some men approach them in manifestation of this power.

Abuses and morbid manifestations.—Ungovernable love of change as to places.

Deficiency or low activity.—Difficulty or inability to recognize positions, and the absence or low degree of a wish to travel.

Illustrations.—We find this organ large in most navigators, as Columbus, Cooke, Mungo Parke. In astronomers and geographers, as Kepler, Galileo, Tycho Brahe, Newton, and Dr. Clarke of Cambridge. In authors and poets, as Tasso, Tennant, and sir W. Scott. In calculators as Bidder and Noakes.

Comparative illustrations.—This organ is possessed by many of the lower animals, and

* Spurzheim's Phrenology, p. 280.

numerous interesting facts are recorded of their manifestations of the faculty, as, without it, they would not be able to find their young, leaving them to find their food. It is very active in some animals over others of the same kind. Horses and dogs possess this faculty to a strong degree; but in some, it is much more powerful than in others, and sometimes we see dogs and horses, particularly the former, find their way from place to place without difficulty, to the surprise of their owners. Cats return home after being carried to a great distance. Also pigeons, and the various migrating birds, possessing this faculty, which at certain periods of the year become so active, that it is difficult to keep them alive, and without injuring themselves in their attempts to escape.* These animals come back, not only into the same climate and the same country, but even to the same place,—to the same window, bush, chimney, or tree.

Remarks.—This organ is generally larger in men than in women.

The frontal sinus has been supposed to be an abjection to this organ, but it rarely ascends higher than its inferior part.

* The reader is requested to read the note at the end of the volume, respecting the comparative illustrations of this organ.

No. 28.—CALCULATION,

OR NUMBER.

Situation.—Immediately adjoining the organ of order, at the external angle of the orbit.

Discovery.—We often find individuals remarkable for their ability to calculate, and this fact soon attracted the notice of Dr. Gall. He found children who frequently excelled in this faculty ; one, which he mentions, was a youth of thirteen years of age, a native of St. Poelton, near Vienna, who soon rose above his schoolfellows in the science of arithmetic, as he performed the most surprising and difficult calculations from memory alone, without any external artificial aid. Others soon offered themselves to the doctor's observation, in whom there existed a prominence at this portion of the frontal bone, and possessing this faculty very large ; whereas, those on the contrary, had it but small, who were deficient or slow in making calculations.

Special functions and uses.—The particular functions of this organ appear to be that of calculation in general. It was named, “ *Le sens des nombres*,” by Dr. Gall, who supposed arithmetic alone to be his chief sphere, as also mathematics. On the other hand, Dr. Spurzheim limited its functions to algebra,

arithmetic, and logarithms, and supposes, that the other branches of mathematics, as geometry, &c., are not the simple results of this faculty.

Subsidiary effects and influences.—It creates the talents for calculation, or the performance of operations on numbers.

Physiognomical Expression.—Certain operations performed by or on the fingers, may be considered natural signs of the activity of this power; as also a particular motion of the eyes has been observed in some individuals noted for a large portion of it.

Abuses or morbid manifestations.—An extraordinary fondness for arithmetical operations; a habit of enumerating, when no useful purpose is to be served.

Deficiency or low activity.—Inaptitude for calculations; difficulty of discriminating the differences of numbers.

Illustrations.—Large in G. Bidder, George Noakes (the calculating child), Zhero Colbourne the American, and Humboldt the traveller; Euler, Kepler, Gassendi, La Place, and Jed. Buxton.

Comparative illustrations.—It is uncertain whether this faculty exists in animals. It is asserted, that a bitch perceives if one of her puppies is removed; but it is not evident that she counts her young; she may perceive by the faculties of individuality and form, that

one or more are wanting. George le Roi has observed, that magpies count three; for if there be a hut in the neighbourhood of a tree, upon which a magpie has placed its nest, and if three persons enter this hut, the bird is not deceived; it does not return to the hut before the whole has left it, but if more than three enter, it is unable to count their number, and can make no comparison to those who have gone out. Dupont de Nemours, however, supposes magpies can count nine.

Remarks.—Some well known instances of uncommon manifestations of the faculty, occasionally occur in those who only possess it in a moderate degree.

No. 29.—ORDER.

Situation.—Immediately adjoining the organ of colour.

Functions and uses.—It creates the faculty of arranging and placing in clear methodical manner, objects as they are physically related.

Subsidiary effects and influences.—In those individuals possessing this organ large, we find them extremely anxious in seeing every article around or about them in its proper place, a disorder of which creates very

unpleasant feelings until the confusion is removed, and then they express feelings of the greatest satisfaction at their proper arrangement.

Physiognomical expression.—The physiognomical indications of this faculty, are frequently to be observed, where the intellectual powers are limited.

Abusive or diseased indications.—Troublesome exactness; a love of order and neatness amounting to a kind of passion; painful solicitude and restlessness on observing disorder.

Deficiency or low activity.—Untidiness, irregularity, slovenliness, contentment in the midst of confusion, inability to rectify it.

Illustrations.—Large in the French “M. D.” and in Humboldt, brother of the traveller.

Remarks.—The arrangement imposed by this faculty, is different from, although, perhaps, one element in, that philosophical method which is the result of the perception of the relation of things. The faculty here spoken of, gives method and order in arranging objects, that are physically related; but philosophical or logical inferences, the conception of systematizing or generalizing, and the classifications are constituted by the reflecting faculties.

No. 30.—EVENTUALITY.

Dr. Gall admits, both in man and in animals, a peculiar organ of educability, or of the memory of things and events. Daily we meet with individuals possessing a general knowledge of the arts and sciences, and who, without being profound, know sufficient to be capable of speaking on them with facility: individuals who are deemed clever and brilliant in society. The middle part of their foreheads, Dr. Gall found, was very regularly prominent. At first, he called the cerebral part in the above situation, the organ of the *memory of things*, because those largely endowed with it, were commonly well informed, and knew a great deal; he afterwards named it the *sense of things*. In comparing animals with men, and one species of animal with another, he found that some have fuller foreheads than wild animals, and that animals are generally tameable as the forehead is more largely developed; he, therefore, now calls it the organ of educability. Dr. Spurzheim objects to this name, as every faculty may be educated, or, in other words, exercised and directed; consequently, he has named it *eventuality*.

Individuals who possess it large, are attentive to all that happens round them, to phe-

nomena, or events, to facts; they are fond of history, of anecdotes, very inquisitive and desire information on all branches of useful knowledge. It is essential to authors, editors, secretaries, historians, and teachers.*

No. 31.—TIME,

OR DURATION.

Situation.—Over that of colour.

Definition and functions.—Dr. Spurzheim has given the name Time to this faculty; “but,” says Sir G. Mackenzie, “to give the idea of duration is more properly its general function. Time is indeed commonly used to denote duration; but, strictly speaking, time is made up of parts, while duration has no beginning, no end, and no divisions. Indeed, it appears, that Dr. Spurzheim actually meant duration, for he says, ‘*Le temps peut être considéré sans nombre; avant hier, hier, aujourd’hui, demain, après demain, de indiquent la durée, ou une succession de jours, sans compter leur nombre.*’ We are induced to do with this, as we propose to do with space and relative position; to name it the faculty of duration and time, understanding

* Spurzheim’s Phrenology, page 285.

by the latter term, that office of the faculty, which enables us to conceive related duration, or the ordinary division of time.”*

Subsidiary effects and influences.—We do not find it unusual to meet persons with a good musical ear, who shall be quite inattentive to the time in which a piece of music should be performed, and consequently incapable of playing on any instrument in concert. Some persons judge much better than others of the amount of time elapsed between one event and another. In all probability, this faculty creates the talent for chronological disquisitions, and the aptitude to preserve regularity and equality in musical notation.

Physiognomical expression.—The general indications are obscure, but the various modes of marking time in music are special expressions, and they are sometimes practised where there is but little melody, as also by those persons who are deaf.

Abuses and morbid manifestations.—Punctiliousness and morbid impatience as to the reason or opportunity of doing things; an apprehensiveness of delay, amounting to a feverish irritability; hurried stamping and gesticulation in the performance of music.

Low activity.—An inability to recollect dates; inexactness to time; procrastination

* Illustrations of Phrenology, p. 178.

from want of a feeling of excitement, independent of reason.

Remarks.—This organ is yet supposed only probable ; but the peculiarity of the faculty appears to be unquestionable.

No. 32.—MELODY,

OR TUNE.

Situation.—Over the organs of order and calculation, towards the lateral part of the forehead.

Functions and effects.—It constructs the mental of perceiving and recollecting melody. For while all persons with perfect ears perceive the impressions of sound, and can distinguish different sounds, many are unable to perceive the relations of sounds productive of harmony, and some not even the succession that forms melody. In common discourse, we say one person has a fine musical ear, another, on the contrary. These differences are common, and of daily occurrence. Yet, even philosophers seldom suppose these differences should exist, and if they do, they ascribe them as usual to education and habit. If they would but enquire, any music-master would tell them, that some are often put under their care, who never derive any benefit from

their instruction, while others often acquire the art without any exertion. This must depend on something, and what can we ascribe it to better, than to cerebral confirmation ; especially, when nature offers so many beautiful examples. We may then conclude, that the function of this organ is to create that enjoyment, and be subservient in the production of melody or song.

Physiognomical expression.—One of the most commonly noticed manifestations, is a sort of upward and lateral motion of the head, as if in order more effectually to catch sounds. Birds frequently exhibit it in the very act of singing. The exercise of the vocal organs as distinct from efforts at speech, is an unequivocal indication of the power.

Abusive manifestations.—Extreme fondness for, and almost perpetual efforts at the production of pleasing sounds ; horror of discord ; music mad.

Low activity.—Indifference to, or very limited liking for, music ; positive disinclination to it, or the feeling of its being an annoyance.

Illustrations.—Dr. Spurzheim observes, that in Gluck it had a pyramidal form, and in Mozart, Viotti, Zumsteg, Dunek, Clementini, and others, the external corners of the forehead are enlarged, but rounded. Large in Haydn, Mac Vicar, Madame Catalani ; small

in Ann Ormerode. The heads of the Italians and Germans are broader and fuller at this part than those of the Negroes, Otaheitans, Spaniards, Frenchmen or Englishmen; in general, musical talent is more common in the former than in the latter.*

Comparative illustrations. — Dr. Spurzheim informs us, that the heads and skulls of singing birds, and those that do not sing, as also the heads of different individuals of the same kind, which exhibit a greater or less disposition to sing, presents a conspicuous difference at the situation of this organ. The skulls of males and those of females of the same species, are easily distinguished by their different development.

Remarks.—Great practice is necessary to be able to observe this organ successfully; and students should place together a person possessing a musical genius, and another who can hardly distinguish between any two notes, and then mark the difference in their heads. The superior development of the former will be perceptible at a glance. Time is necessary to produce music.

* Combe's Phrenology, p. 318.

No. 33.—LANGUAGE.

Situation.—About the middle of the orbital process of the frontal bone, formed by the inferior surface of the anterior lobes of the brain, and, when large, gives fullness and prominence to the eyes.

Discovery.—This has already been noticed in the history of this science.

Functions and effects.—The special function of this organ, is to enable us to acquire a knowledge of, and the power of using artificial signs or words. Persons having a great endowment of it abound in words. Their language, in ordinary conversation, flows like a copious stream—in a speech, they pour out in torrents. This faculty is necessary for the orator, writer, and poet. When large, and reflection small, the individual often repeats the same sentences as if of difficult comprehension. This practice appears to originate in an immoderate power and activity of the faculty of language, so great, that the delight is felt in mere articulation, independent of reflection. The same combination produces a verbose, cumbersome, and inelegant style of literary composition. Mr. Litchfield's work on Medical Education, contains a superfluous quantity of words, with but little sense. Thompson's Seasons also exhibit a redundancy of words, and in this

author it was very large, as also in the “dramas of the ancient world,” by David Lindsay, we find examples of this species of writing.

Physiognomical expression.—The attention early paid by children to what is said, and their efforts to speak, even when the real meaning of words is unknown to them, manifest this faculty.

Abusive manifestations.—Great talkativeness to no purpose; a profusion of words without proportional ideas: senseless palaver-ing.

Low activity.—Paucity of words; poverty of style; hesitancy in speech; some kinds of stammering.

Illustrations.—Large in the companion of Gall, Sir J. E. Smith, Humboldt, Voltaire, and G. J. Guthrie, Esq. F. R. S.; small in the mask of Frazer.

Comparative illustrations.—Animals which have a certain faculty common with man, understand his natural manifestations. The dog, for example, perfectly understands the signs of his master when in anger, because the dog is in the possession of a similar faculty.

Animals do not all produce, yet they learn, the meaning of arbitrary signs, in as far as they are endowed with the respective sensations and ideas; hence tame animals learn, in every country, the arbitrary language of their masters: they may even acquire the signi-

fications of different sounds in different languages.

Remarks.—This faculty, most likely, is entirely confined to arbitrary signs. The understanding of their meaning, and the instinctive perception of that of natural language, depend on other powers.



CHAPTER XIX.

Description of the organs of Causality and Comparison.

GENUS IV.—*Reflective Faculties.*

By the reflective faculties we mean those which produce ideas of relation and reflection.—They administer to the gratification and direction of the other powers, and constitute what we call REASON.



No. 34.—CAUSALITY.

Situation.—This organ is situated at the superior part of the forehead, on the other side of comparison.

Discovery.—Dr. Gall noticed, at Vienna,

that in the most zealous disciples of Kant, there were men distinguished for their profound, penetrating, metaphysical talent, in whom these parts of the brain were distinctly enlarged. The same was found in a mask of Kant himself, where it formed a remarkable projection. In Fichte, they found it larger than in Kant. The busts of Socrates, Bacon, and Galileo, exhibited the upper parts of the forehead greatly developed.

Functions and uses.—In those persons possessing this organ large, we find a great disposition to doubt the common relation of things, and enquire, why and wherefore is this so, &c. For example, if an individual endeavours to prove the existence of a SUPREME BEING to a profound Atheist, he replies, before you are able to prove it, tell me, *who made God?* It also gives deep penetration in logical arguments; consequently, it is larger in those who possess a natural genius for metaphysics, political economy, or similar sciences; a consecutiveness of reasoning; penetration as to the principles of action. It creates the power by which we obtain a knowledge of, and trace the relation between causes and effects; it is the “reasoning power of LOCKE.”

Physiognomical expression.—Generally, an air of intenseness and abstraction, as marked in the fixed eyes and knitted eyebrows.

Abusive manifestations.—Unpopular abstruseness and profundity of thought; perplexing inquisitiveness; unsatisfying ratiocination.

Low activity.—Superficialness of mind; incapability for, and dislike to, deep thinking; want of consecutiveness of ideas, rambling manner; systematic preference for practical precepts to theoretical principles.

Illustrations.—Hume, Dr. Adam Smith, and Dr. Brown, exhibit great causality; Dr. Reid not so much, and Mr. Stewart still less. The portraits of the first three represent it decidedly large. As also in Bacon, Locke, Franklin, Playfair, Haydon, Ed. Burke, Brunel, Wordsworth, and Wilkie. Moderate in Pitt, and Sir J. E. Smith; deficient in the Caribs and new Hollanders, and small in the French.

Remarks.—The proportions in which this organ and comparison are possessed, constitute the most remarkable intellectual differences among mankind.

Generally found more predominant in men than in women.

No. 35.—COMPARATIVENESS,

OR COMPARISON.

Situation.—In the centre of the forehead,

between the organs of benevolence and even-tuality.

Discovery.—Dr. Gall often conversed on philosophical subjects with *a savant*, possessing much vivacity of mind. Whenever the latter was difficult in proving his position, he had recourse to a companion. As soon as the Doctor observed this to be a characteristic trait of his mind, he examined his head, and found an eminence of the form of a reversed pyramid, in the superior and middle portion of the frontal bone. He confirmed this observation by many subsequent observations.

Functions and effects.—This faculty attaches us to comparison, without determining its kinds, for every one chooses his analogies from his knowledge, or those of other faculties. He who has locality large, derives from thence his examples; while another, in whom configuration predominates, will illustrate from it. Dr. Chalmers takes his illustrations from mechanics and astronomy; and the organs which take cognizance of these, are large in his mask.

From comparison and analogy a great part of our language, expressive of the mind, is drawn. “A great portion being almost metaphorical, is applied originally in its literal sense to designate qualities of matter.” For this reason, every national language proves the development in different individu-

als. If they have this faculty large, their language is replete with figure. Dr. Murray Patterson observes, that the Hindostanee language abounds in figures, and that comparison is larger than causality in the Hindoo heads generally. It is the origin of proverbs, which generally convey instruction under figurative expressions.

Physiognomical expression.—This is not easily decided on, and will require for its discovery much more attention than has yet been bestowed on it.

Abusive manifestations.—Profusion of figures; tautology, or monotony; of thought; parabolic quaintness of style; overloaded imagery.

Low activity.—Unpopular dryness of manner as to composition; scantiness of ideas in point.

Illustrations.—Very large in the foreheads of W. Pitt, Curran, Chalmers, Ed. Burke, Jeffrey, Raphael, Roscoe, Buffon, Edwards, Henri Quatre, J. Hume, M. P. and Hindoos; deficient in the Caribs.

Remarks.—Other faculties compare their own objects; but this comprehends the objects of various powers, so far as they are capable of exciting the ideas of resemblance.

CHAPTER XX.

*Description of the organ of Alimentativeness.
Its discovery by Mr. Crook and Dr. Hoppe.*

No. 36.—ALIMENTATIVENESS,*

By the accounts published of this organ, there seems to be some dispute among phrenologists, as to whether the discovery is owing to Mr. Crook, of London, or Dr. Hoppe, of Copenhagen; however, this is but of little importance, and I shall quote the accounts of each.

“Three persons,” says Mr. Crook,† “with whom I had become acquainted in the year 1819, first led me to suspect that a portion of the brain, situated near the front of the ear, (next to destructiveness) was connected with the pleasures of the festive board. From that time to the end of 1822, above 1000 observations were made; as they tended to confirm this view, several phrenological friends were

* Termed by Mr. Crook, Gustativeness, or the organ of the appetitive for food.

† Compend. of Phrenology, p. 16. 1828.

informed as the result. From 1823, I no longer doubted that the anterior portion of the middle lobe was a distinct organ, that its primary use was the discrimination and enjoyment of meats and drink. It was difficult, however, to hit the fundamental power. The situation of the organ, under the zygomatic process, the temporal muscle, frequently precluded the possibility of animate observation. But, notwithstanding, well marked cases, both of a positive and a negative kind, were investigated. These conclusions were embodied, and read to the Phrenological Society of London, on the 8th of April, 1825. Two months before, though it was not known in London, a letter had been received in Edinburgh from Dr. Hoppe, of Copenhagen, giving the same portions of the brain to the sensations of hunger and thirst. The coincidence was felt to be remarkable, and to myself particularly so, as I had, in 1821, conceived a similar idea, but discarded it upon considering the dependence of these feelings upon the stomach and tongue."

"In my last conversation upon the subject with Dr. Spurzheim, at Cambridge, in December, 1826, he fully admitted the discovery of the organ, but thought the instinct to eat, to be the special function. This view approximates so closely to my own, that it is only in very extraordinary cases that the ma-

nifestations of the one, can be clearly distinguished from those of the other; but one decided case I met with, in 1827, in which no part of the *cerebrum* existed (?); yet, during the eight days life of this imperfectly formed creature, there had been *incessant craving for food*, which it took in very considerable quantity, but without any apparent discrimination as to taste or flavour. To admit the ‘*instinct to eat*’ to be the primitive power, would subvert the first principle of physiology—the inseparable connection between organ and function.”*

In the sheep, the olfactory nerves, which are very large, are perceived to terminate in two cerebral convolutions lying at the base of the middle lobe of the brain, adjoining, and immediately below the situation of the organs of destructiveness in carnivorous animals. The sheep is guided in the selection of its food by the sense of smell; and the interference suggests itself, that these parts may be the organs of the instinct which prompts it to take nourishment. Corresponding convolutions occur in the human brain, but the functions of them are not correctly ascertained, although they are conjectured; owing to their local situation, presenting obstacles to the determination of their size during life. The

* Compend. of Phrenology, p. 17.

conjecture is plausible, that they may serve a similar purpose to those supposed to exist in sheep. These are borne out by the observations of Mr. Crook.*

Dr. Hoppe's observations.—He is of opinion, that, besides the nerves of the stomach and palate, an affection which gives rise to the sensations of hunger and thirst, there must also be an organ in the brains of animals for the instinct of *nutrition*, which incites them to the sensual enjoyments of the palate, and the activity of which is *independent* of hunger and thirst. “How,” says he, “should the mere sense of hunger, more than any other disagreeable or painful sensation, make the animal desire food, the necessity of such not being known to him by experience? This could only be effected by *instinct*, because either an instinct, *i. e.*, the immediate impulse of an organ, or else experience and reflection are the causes of actions.

“We observe, that the chicken is no sooner off the egg, than it picks up the grain from the ground, and the new born babe sucks the nipple. How is this to be explained without the supposition of an organ analogous to that, which makes the duckling plunge immediately into the water, or makes the kitten bite the first mouse it meets with?

* Phrenological Journal, Nos. v. and vii.

“Neither am I able otherwise to conceive, how the new born animal can discriminate what is useful for nutrition; that, for instance, the chicken never mistakes gravel for grain, and that the wild beasts always avoid poisonous plants without even tasting them.

“When the child, in perfect health, sucks till the stomach is filled, in a literal sense of the word, it surely feels no hunger or thirst; yet, if laid to the breast, it will continue sucking, even sometimes having thrown off the last draught from over-filling.”

“If nothing but hunger and thirst impelled man to take food, he would, when satiated, have no appetite for meat and drink; and yet, we daily see people that cannot resist the temptation of surfeiting themselves, though they know it to be noxious, and others again that never are tempted to gluttony.”

Dr. Hoppe adds several other reasons in support of an organ of nutrition, and sums up his views in the following manner:—“According to my opinion, *hunger and thirst* must be discriminated from the desire of food, which we call *appetite*; for those I consider as only affections of the stomachic and palatine nerves, caused by the defect of necessary supply; but appetite, as an activity of a fundamental animal instinct, which has in the brain an organ analogous to the rest of the organs. Yet, there is a very intimate con-

nection between these ; thus, nothing can more effectually rouse appetite than hunger.*

This organ is marked * in the frontispiece.



CHAPTER XXI.

Sir Everard Home's method of ascertaining the functions of the brain.

Sir Everard Home,† in his observations on the functions of the brain, read at the Royal Society, on the 26th of May, 1814, seems to trust to a peculiar means of determining the functions of the cerebral parts ; he says, “ the various attempts which have been made to procure accurate information respecting the functions that belong to individual portions of the human brain, having been attended with very little success, it has occurred to me, that were anatomical surgeons to collect in one view all the appearances they had met with, in cases of injury to that organ, and the effects

* Combe's Phrenology, page 114.

† Phil. Transactions for the year 1814, part xi. page 769.

that such injuries produced upon its functions, a body of evidence might be formed, that would materially advance this highly important investigation." He then informs his readers, that he has brought together certain observations, stating them as so many experiments upon the brain, with the conclusions which tend to elucidate this particular enquiry.

Let us first hear his observations; we read,*
 " that in the torpid state, commonly attended upon violent shakes being given to the brain, the senses are so much impaired, that little information can be gained respecting the effects produced upon the internal organs; that a *coup de soleil* is sometimes accompanied with delirium, loss of speech, and the power of swallowing: that blood extravasated in the lateral and third ventricles was attended by repeated fits of vomiting and by coma: that coagulable lymph spread over the union of the optic nerves, the pineal gland, and tuberculum annulare, was followed by permanent contractions of the muscles between the occiput and vertebræ of the neck, dilation of the pupils, and a great degree of deafness: that the formation of pus under the duramater covering the right hemisphere, was accompanied by delirium, succeeded by coma:

* Sect 11. p. 477, &c.

that a tumour in the substance of the posterior lobe of the brain, was attended with derangements of the functions of the stomach and bowels, and with double vision: and that a deep wound in the right anterior lobe of the brain, attended with inflammation and supuration, produced no effects whatever, the senses remaining entire, and the persons not knowing that the head was injured. In a case, also, in which the tuberculum annulare had become so hard, as not to be cut easily with a knife, a considerable quantity of earthy particles having been intermixed with the medullary substance of the crura, and other parts of the cerebellum being unusually soft, the effects were, that a boy had been an idiot from birth, never walked, spoke, nor understood what was said, often went three days without food, and so on."

I suppose, Sir Everard Home did not intend to state such facts as quite new or unobserved; for every one who is but half acquainted with the history of the healthy and diseased state of the brain, knows, that many authors have related cases, in most, or in all respects similar. We learn, however, from his papers, that like grave affections of the brain often produce no perceptible derangements in the manifestations of the mind; I only maintain, that the means Sir Everard Home has adopted, are quite inadequate to

point out the functions of the brain, and that all hope of success from such a procedure is vain: thus, my opinion, is supported by Sir E. Home himself. He does, indeed, speak of a body of evidence which might be found, and of conclusions which tend to elucidate this peculiar enquiry; but he has not drawn even one inference in various pathological affections of the brain; he has observed head-ach, giddiness, faintness, loss of memory, want of sleep, delirium, mania, depression of spirits, melancholy, apoplexy, idiotism, hissing noise in the ear, deafness, blindness, loss of speech, irregular pulse, stupor, the mouth drawn to one side, numbness in the arms and legs, spasms in the lower extremities, stumbling in walking, pain between the shoulders, nausea, retching, slow action of purgative medicines, vomiting, convulsions, &c. Perhaps Sir E. Home will be inclined to infer, that the brain is the organ of these symptoms, or may it be the states which are opposite them? The above will be sufficient to shew the intelligent reader, that by Sir E. Home's mode, we should never be able to determine the peculiar functions of the cerebral parts.*

* Spurzheim's Phrenology.

CHAPTER XXII.

The anatomy of the brain briefly described according to the methods pursued by Drs. Gall and Spurzheim.—Directions for removing the brain from the skull.

I now offer to the anatomical and scientific phrenologist, a brief description of the method pursued in the dissection of the brain, by Drs. Gall and Spurzheim, who most certainly deserve all the credit that science can bestow, it being only through their indefatigable labours that mankind at last possesses some information respecting the true structure and functions of this important organ; and in this assertion I am borne out by two most eminent characters* in this metropolis, that the anatomy and physiology of the brain, was not understood until the researches of these industrious investigators of nature had promulgated their voluminous observations, and their names, like that of our immortal countryman,† will be transmitted down with honour to a grateful posterity.

* Mr. Abernethy and Sir Astley Cooper.

† Dr. William Harvey, the maternal ancestor to the Earl of Winchelsea, who discovered the circulation of the blood, in 1690. See DEWHURST'S *Dictionary of Anatomy of Physiology*.

In the dissection of the brain, they commence with the spinal marrow and the medulla oblongata, whose fibres they trace into the substance of the brain itself, observing at the same time, that all the *fasciculi* take their origin on the same side of which they become portions of the cerebrum, communicating with the nervous systems on the same side, with the exception of the corpora pyramidalia, the fibres of which decussate each other. By this beautiful formation, we are able to ascertain the reason why injuries of the head, are influenced by the opposite of the body, and cause paralysis; and as only a portion of the brain, is by decussation, communicating with the nervous mass of the body, this phenomena is thus easily explained. Drs. Gall and Spurzheim differ from anatomists in general, and deny, that the medulla spinatis is (as is now believed) an elongation of the nervous substance of the brain, or that the nerves arise from either, at the same time remarking, that these portions are only connected to one another; and also, that the latter have their origin whence the nervous fibrillæ take their course. They also assert, that the functions of the nervous system of the sensitive organs,* are in proportion

* By means of the five senses we are enabled to live more happy, and enjoy the pleasures of the external

to the perfection of their peculiar organization, but not from the quantity of the brain.*

“ The first roots that are visible of the cerebellum (or little brain), arise from the greyish substance, which is situated in the interior of the medulla oblongata, there constituting a fibrous cord on each side, which continually becomes thicker as it ascends, and near the cerebellum it is covered by the nerves auditorious. Uncovering the auditory nerves, following the direction of the fibres, we perceive the whole cord enter the interior of the hemisphere. It proceeds only a few lines, when it meets with an accumulation of a greyish substance, where it constitutes a very dense tissue, so that it is impossible to pursue in it any further the nervous filaments. This tissue has an indented and irregular figure, and has been named by anatomists, *corpus dentatum, ciliare, rhomboideum, zig-*

world :—1, the eyes are adopted for vision ; 2, the ears for hearing, and the modulation of sound ; 3, the nose for smell ; 4, the tongue for taste, and 5, the skin for touch.

* “ I admit five kinds of nerves, and subdivide each kind ; the first kind of nerves presides over automatic life ; the second over voluntary motion ; the third over the functions of the five senses ; the fourth over the moral feelings ; and the fifth over the intellectual faculties.” —*Dr. Spurzheim's Physiognomical System*, page 184.

lag or *nucleus*. The cineritious substance contained in this body, is a preparatory apparatus, destined by new fibres to increase the nervous filaments which enter it ; it is, consequently, a large point of increase for the cerebellum. Consequently, we find several new nervous bundles take their origin in it, then ramify into branches, layers, and multiply subdivisions. There is an increase of cineritious substance at every point, from which any principal branch arises.

“ In man, one principal branch goes towards the median line, and, with its fellow on the opposite side, contributes to form the fundamental portion of the cerebellum, namely, the *vermiform process*, which is ordinarily divided into seven principal branches.” “ The other branches which go off from the *corpus dentatum* are directed upward, downward, and outward, and are expanded into slender layers, constituting the origin of the cerebellum. The nervous fibres of all the divisions and subdivisions are, at their peripheral extremity, covered with the *grey*, or *cineritious substance* of the cerebrum or brain ;* the *anterior* and *external* bundles of the fibres of its *crura*, are the continuation and gradual

* The older anatomists divided the brain into two portions, the cerebrum a larger brain, and the cerebellum or little brain.

completion of the primitive pyramidal bundles, which pass through the *pons varolii*." They contain, internally, throughout their whole course, a great quantity of grey substance, from which they are continually increased by the junction of new fibres. At their upper extremity, where the optic nerve bears round their outer side, or at the exterior part of the *corpora striata*, they receive the greatest additions. Thus becoming greatly enlarged, the nervous bundles of the *crura cerebri* assume a diverging direction, forming variously folded expansions, constituting the convolutions of the brain. In this way the pyramidal eminences being successively increased, and at last completely developed, form the *inferior, anterior, and exterior convolutions* of the *anterior and middle lobes*." "The bundle of fibres which comes from the olivary tubercle, or *corpus olivare*, and some other posterior bundles, ascend, like the pyramids, through the transverse cords of the commissure of the cerebellum, or *pons varolii*. In their ascent they receive additions, which are, however, less considerable than those of the pyramidal eminences; and they constitute the posterior and inferior parts of the *crura cerebri*. Here they receive the greatest additions from the thick grey mass contained in the *crura*, which gives origin to many fibres, forming a hard ganglion, flat in

the middle, and unequal at its superior and posterior sides. This ganglion is known by the appellation of the *optic thalamus*. The anterior bundles of the two thalami nervi optici, penetrate large masses of grey substance; viz. those portions of the corpora striata, situated in the great cavities in the lateral ventricles, receiving from them a considerable addition. The bundles of this ganglion constitute the posterior lobes, and the superior convolutions towards the mesial line of the head." "Thus the *thalami* and corpora striata, are considered as apparatus of increase, in which many new fibres arise and join the others." To these fibres, Drs. Gall and Spurzheim, follow, from their origin, to the bottom of the convolutions, they have given the name of *diverging* fibres, in contradistinction to another order, which comes out of the convolutions, always *converging*, hemming thicker, crossing the diverging fibres, and forming commissures or unions." The great commissure of the cerebellum, or pons varolii, consist of numerous fibres, which are not in immediate connection either with the original band, or with the apparatus of increase. Of these fibres, the anterior ones *converging* towards the external margin of the cerebellum, lie in front: the middle and posterior ones pass transversely through the longitudinal bands, which go to diverge in the hemispheres

of the brain : all of them unite in the median line with their fellows of the opposite side, and thus joins the two hemispheres of the cerebellum." " This commissure is formed by those fine and soft fibrous layers, which, arising from the superior and inferior parts of the fundamental portions, are commonly called the superior and inferior valves."

" The uniting fibres of the *inferior* convolutions of the *posterior* lobe of the cerebrum, and those of the posterior convolutions of *middle* lobe, bends behind the *curva cerebri*, and posteriorly to the pretended optic thalami, it passes from every side toward the middle line in an oblique direction, and are joined together."

The *internal* convolutions of the *posterior* lobe, give off those uniting fibres, which are called (in the aggregate) the posterior fold of the corpus callosum ; and the other uniting fibres of these convolutions, constitute the "*fornix* and its *lyra*." " The uniting fibres of the *anterior* convolutions of the middle lobe, form the nervous cord, which passes through the corpora striata, without being adherent to their fibres, and the cord of each side uniting, presents, in man, the shape of a *bow*, the convex part of which is directed forward, while in animals, its convex part is directed backwards. The *inferior* convolutions of the anterior lobes, have their commis-

tures in what is called the anterior fold, and the corpus callosum. All the superior convolutions of both hemispheres of the brain, have their uniting fibres in the great commissure or corpus callosum.

“ At the bottom of the convolutions, the *diverging* and *converging* filaments of the *corpora striata* and *thalami* cross each other often, and form a tissue, from which, however, they are soon afterwards disengaged. Beyond this tissue, therefore, each duplicature may be easily separated into two layers; and as this may be done in all the convolutions, it follows, that if the tissue be destroyed by a rude kind of manipulation, or, as in hydrocephalus, extended by the gentle action of a gentle but constant and regular force, all the duplicatures will be transformed into a kind of membranous expansion externally covered by a grey substance.”

“ It is not certain that the corresponding parts of both cerebral hemispheres are in *immediate* contiguity; for there is in the middle line of all the commissures a layer of transverse fibres, accompanied by blood-vessels, in the same direction.” “ These intermedial fibres produce, what is termed by anatomists the corpus callosum.

The *septum lucidum* may be considered as the continuation and expansion of a fibrous handle, resembling a band, between the an-

terior and middle lobes. It is in communication with the intermedial fibres of the corpus callosum.

“The *carpora condicantia*, or mammillaria, are separated from each other in man; in animals they adhere, and appear to form but one tubercle. Each corpus candicantia, contains three cords, of which, two are internal and one external. The internal cord is joined to a transverse band under the optic nerve, the internal is in connection with the anterior crus of the former, and the internal posterior sinks into the interior of the thalamus, and is there united to another transverse band.”

“The pineal gland bears a name decidedly inaccurate. It is not a gland, but composed of grey and white substance; four nervous filaments are produced in it. Its name *pineal* has been derived from its mechanical form, which somewhat resembles a cone of the pine or fir.”

“Besides, the separate and independent origin of every nervous part, and the commissures or junctions of all those nervous parts which are double; there is yet another nervous apparatus, which Dr. Spurzheim calls the apparatus of communication. By this means, particular nervous parts are brought into communication, and placed under mutual influence, and they serve to elucidate the sympathies of the various faculties.”

Thus, then, it appears, these anatomists consider the medullary substance of the brain, to consist of various systems of fibres, which spring from the grey or cineritious mass, are variously united, and in continuation with the spinal marrow and nerves. While they are of opinion that the cineritious or dark coloured parts in the interior of the organ are points of increase for the fibres, and from which they extend their ramifications.

**DIRECTIONS FOR REMOVING THE BRAIN, BY
DR. SPURZHEIM.***

“ To take the human brain from the skull, I make an incision from one ear to the other, turn the integuments backward and forwards, and detach the temporal muscles from the bone. If it is requisite to preserve the skull, it must be sawed at three quarters of an inch above the superciliary ridge, round on each side to the middle of the occipital bone; if it be no object to keep the skull entire, Bichat's plan, which is much easier and more speedily accomplished, may be followed; it consists in using the sharp edge of a hammer along the course indicated, and breaking in-

* The Anatomy of the Brain, &c. by G. Spurzheim, M. D., 1826, page 221.

stead of sawing the skull. In this way infinitely less risk is run of injuring the membranes and cerebral convolutions than when the saw is employed. There usually issues a greater quantity of fluid from between the membranes, and from out of the vessels of the neck. When they are divided, in consequence of the shaking the parts have undergone, the cerebral mass also sticks to a greater extent, and the dura mater does not look so tightly stretched over the convolutions; but the internal organization suffers no change.

“ When the skull cap is removed, cut the dura-mater on each side of the longitudinal sinus before and behind, and transversely between the ears: I then turn down the flaps, detaching the falciform process* of the dura-mater in the frontal region, and turn it backwards. I now bring back the head, so that the bone becomes the superior part; support it with the left hand in the occipital region, and the brain then lies on the palm of the hand. Their own weight almost always suffices to detach the anterior and middle lobes from their places,—at the most, the slightest assistance from the fingers accomplishes this. The bulb of the olfactory nerve generally separates from the ethmoid bone of itself, or

* Syn. Septum Cerebri.—JOSHUA BROOKES.

the handle of a scalpel, detaches it with ease. The optic nerves, the infundibulum, the oculo-motors, the abductor nerves of the eye, the nerves of the superior oblique, and the trigeminal pair, must be cut in succession. I now depress the head upon the hand, first on one then on the other side, pushing at each time the hemispheres from the tentorium, in order to cut this part across. After this, I detach the nervous pairs and blood vessels situate near the medulla oblongata; and lastly, I cut the cervical across, below the occipital hole, as low down as possible, not to damage the decussating fibres. I raise the cerebellum with the fingers of the right hand, and lift the entire cerebral mass from the cranium. There is one precaution that is very necessary to be taken; it is, to support the hemispheres with the flat of the hand properly, to prevent the crura from being torn before the tentorium is cut, and to guard against the same accident, in regard to the medulla oblongata below the annular protuberance."

NOTE ILLUSTRATIVE
OF THE
ORGAN OF LOCALITY.

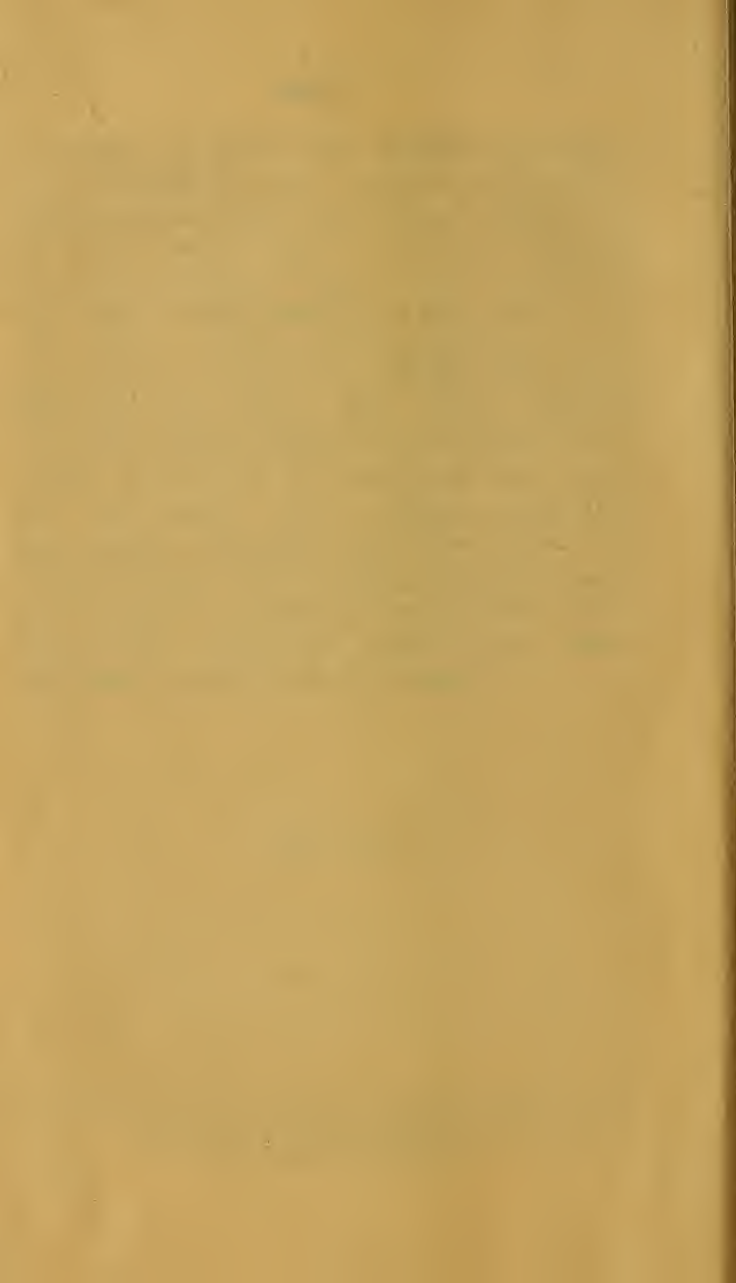


The following note page, affords an illustration of this organ, and cannot fail of creating interest in the mind of the philosophic phrenologist and lover of natural history :—

“Mr. ROBERT SWEET, of Chelsea, the well known botanical author, who keeps a great many of the migrating birds, has written a small essay, entitled “ BRITISH WARBLERS,” on the *Genus Silvia*. He gives the following account :—These birds, when in confinement, are very restless at the seasons of their usual emigration from one country to another ; in autumn, about twice during the winter, and again when they are returning in the spring. From their agitation at various times in winter, it may be concluded that they visit more than one country after their departure from this. It is very curious to see them when in this state: their restlessness seems to come at once, and generally in the evening. When they are sitting, seemingly quite composed, they start up suddenly and flutter their wings; sometimes flying direct to the top of the cage,

or aviary: at other times running backwards and forwards on their perches, continually flapping their wings, and looking upwards all the time: nor will they notice any thing that is going forward as long as they continue in that state, which lasts for an hour or two at each time. By their always wishing to fly upwards, it may be supposed, that when they first direct their flight, they mount upwards to a great height, so that they can direct their course the better, by seeing the way clear all round them. Their agitation generally lasts about a fortnight, sometimes more, and sometimes less: in the spring it seems strongest on them. At that season they will sometimes flutter about the whole of the night, and sleep a great part of the day."

THE END.



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